December 30, 1935

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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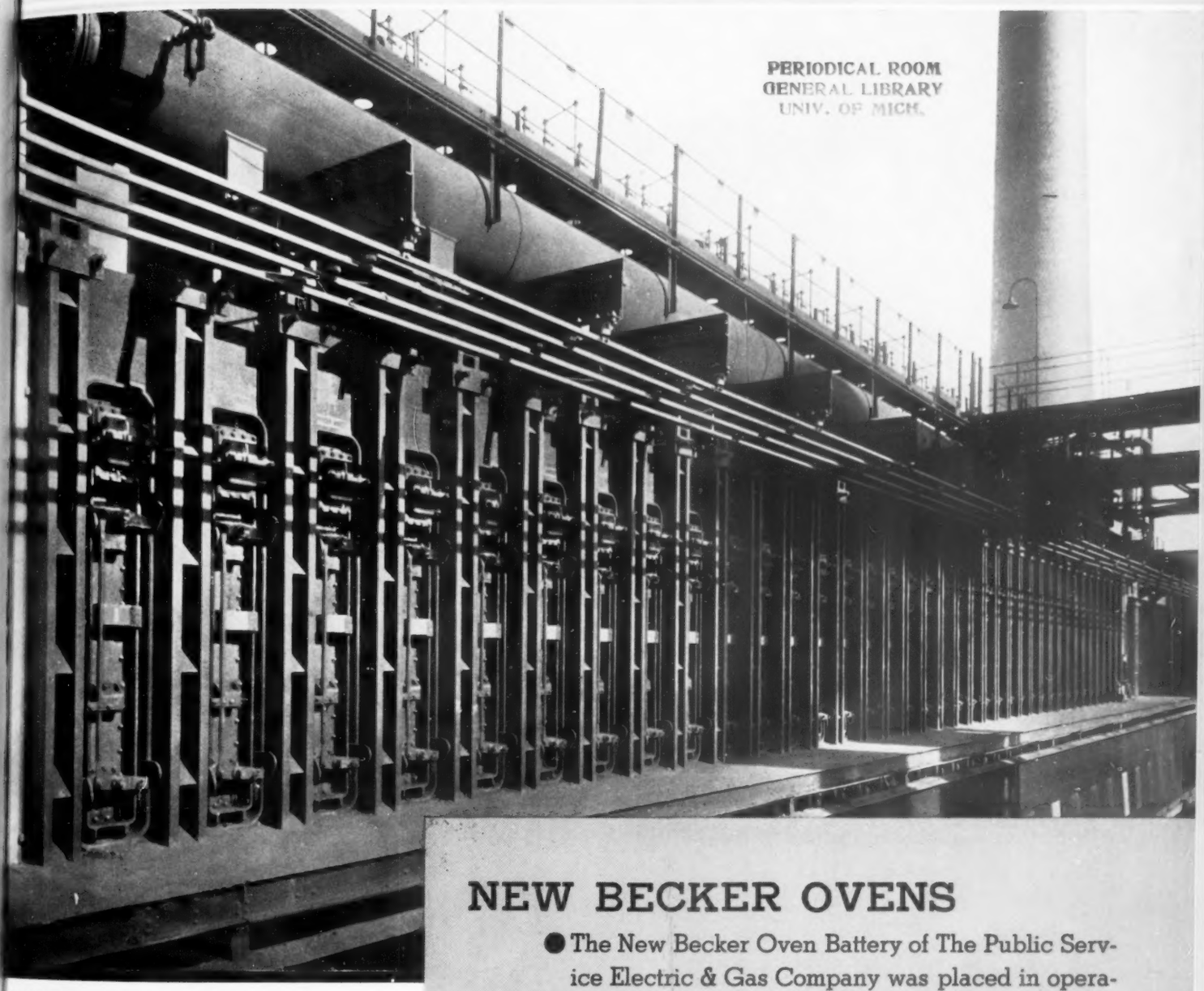


NEW BECKER OVENS

- The New Becker Oven Battery of The Public Service Electric & Gas Company was placed in operation at Camden, New Jersey, in October 1935.
- Equipped with the latest type of self-sealing doors and having as a new feature, *exceptionally low differential pressure*, this installation commands the attention of the by-product coke oven industry.

KOPPERS OFFERS:

BECKER OVEN PLANTS . . . GAS PRODUCERS . . . WATER GAS PLANTS . . . LIQUID PURIFICATION PLANTS . . . PHENOL REMOVAL PLANTS . . . MATERIAL HANDLING PLANTS . . . BY-PRODUCT EQUIPMENT . . . BENZOL PLANTS . . .

KOPPERS CONSTRUCTION COMPANY

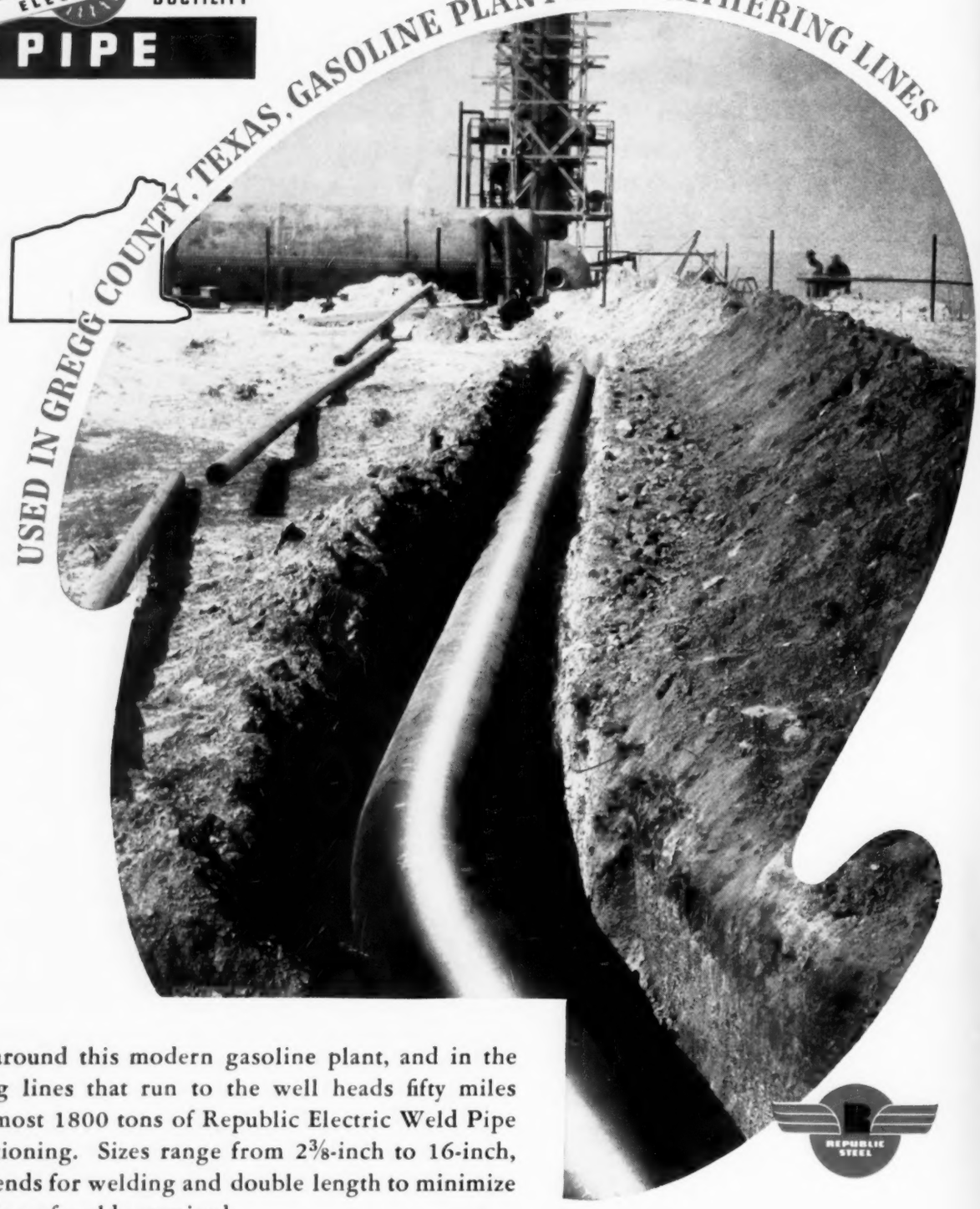
Pittsburgh Pennsylvania

REPUBLIC

HIGH YIELD POINT — ELECTRIC WELD — HIGH DUCTILITY

PIPE

USED IN GREGG COUNTY, TEXAS, GASOLINE PLANT AND GATHERING LINES



In and around this modern gasoline plant, and in the gathering lines that run to the well heads fifty miles away, almost 1800 tons of Republic Electric Weld Pipe are functioning. Sizes range from 2⅜-inch to 16-inch, beveled ends for welding and double length to minimize the number of welds required.

For lines of every description, this modern pipe shows every advantage. Because of Republic's patented process of electrical resistance welding, the weld in every length is 100% . . . the pipe is round and of uniform wall thickness . . . it welds easily . . . and it may be had in double lengths—continuous lengths without mid-weld.

Complete information sent upon request.

Republic Steel

CORPORATION

GENERAL OFFICES · · · YOUNGSTOWN, OHIO

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SIX TIMES LONGER SERVICE IS RECORD OF NEW PLATES

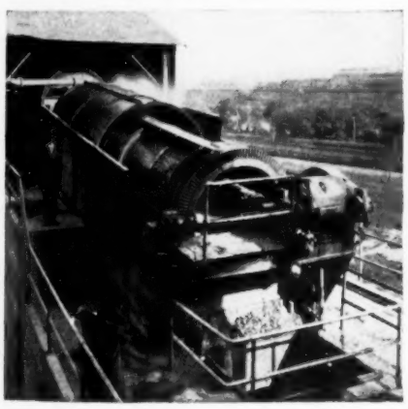
Abrasive-Resisting Plate Use Reveals Economy and Good Fabricating Qualities

Cylindrical rotating screens for washing gravel are used by a buyer of Bethlehem Abrasive-Resisting Steel Plate. More than a year ago the company decided to apply the Bethlehem Abrasive-Resisting Plate to this service.

"The screens lasted twelve months —six times as long as the screens we used formerly, made of ordinary steel," this user reported. "During this time they were handling about 1500 cu. yds. of hard quartzite each 24 hours."

The fabricating quality as well as the economy of Bethlehem Abrasive-Resisting Plate is illustrated by its use in these screens. Each screen is 54 in. in diameter and 20 ft. long, made of plates perforated with $\frac{7}{16}$ in. drilled holes.

RESISTS WEAR



Stone crusher, containing screens made of Bethlehem Abrasive-Resisting Plate. The application is similar to that in the gravel screens described above, in which Bethlehem Abrasive-Resisting Plate lasted six times as long as ordinary plate, the user said.

Bethlehem Abrasive-Resisting Steel Plate is now being used in road-building equipment, in the brick and other ceramic industries and in the handling of coal, coke, gravel and many other abrasive materials. Its low cost and ability to take simple forming operations make this Bethlehem Plate the logical choice for applications exposed to abrasive wear.

LARGE HEAD ORDERS SHIPPED PROMPTLY

Bethlehem Flange Shop Geared for Quick Service

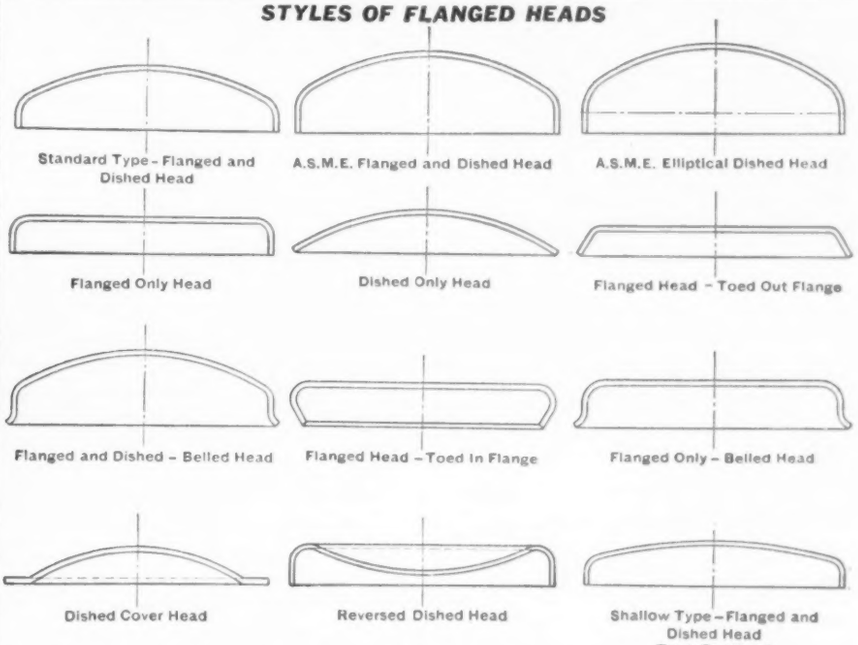
The location of the Bethlehem Flanging Shop, with plate mills and open-hearth furnaces, even blast furnaces, right at hand, enables Bethlehem quickly to fill the largest orders.

Even when the necessary steel plates have to be rolled, it is not uncommon for Bethlehem to complete and ship orders of substantial size for flanged and dished heads within from 24 to 36 hours after the orders are placed.

HEADS IN BETHLEHEM SHOP

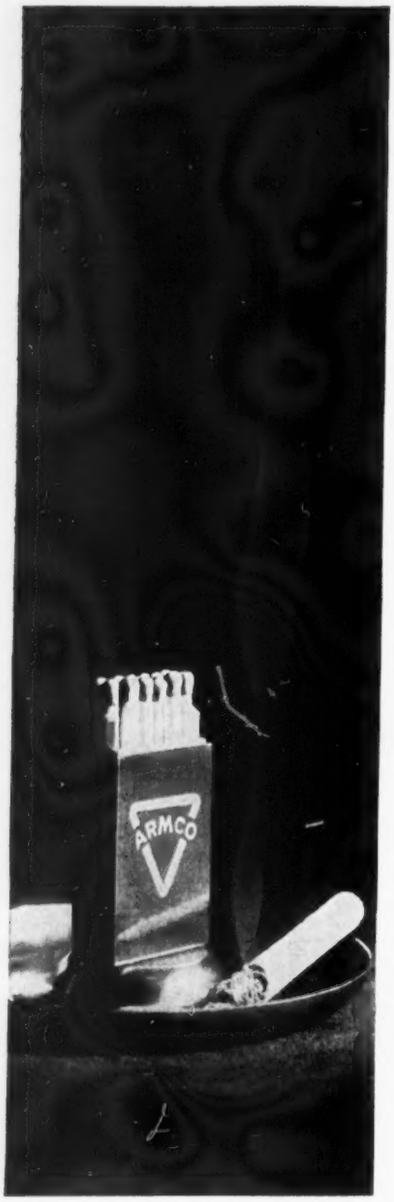
Flanged Heads in the Bethlehem Flange Shop at Sparrows Point, Md., ready for shipment.

STYLES OF FLANGED HEADS


Standard Type – Flanged and Dished Head
A.S.M.E. Flanged and Dished Head
A.S.M.E. Elliptical Dished Head
Flanged Only Head
Dished Only Head
Flanged Head – Toed Out Flange
Flanged and Dished – Belled Head
Flanged Head – Toed In Flange
Flanged Only – Belled Head
Dished Cover Head
Reversed Dished Head
Shallow Type – Flanged and Dished Head
Tank Car Head

A wide variety of types and sizes of Flanged only, Dished only or Flanged and Dished Heads is produced by modern equipment in the Bethlehem Flange Shop. The location of the shop, next door to our plate mill, and near open-hearths and even blast furnaces, enables Bethlehem quickly to fill the largest orders.

BETHLEHEM STEEL COMPANY
GENERAL OFFICES: BETHLEHEM, PA.



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ONE DAY

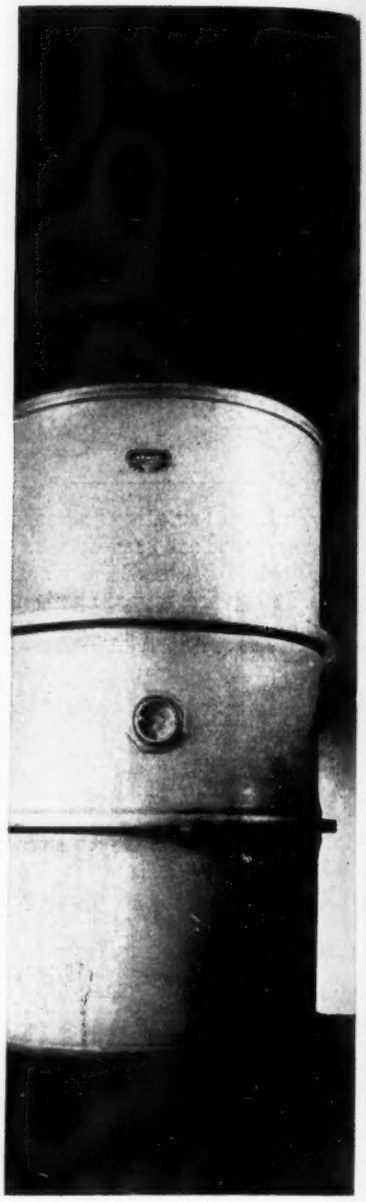
AN

ASH TRAY

THE NEXT

A

GIANT DRUM



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Here are sheets, plates and strip that take their work in stride—that fabricate readily and are really a credit to you when the job is done.

Naturally, ARMCO STAINLESS STEELS repel most of the acids and corrosives encountered in modern industry. Naturally, too, they are easy to clean and keep clean, absolutely non-contaminating. They withstand oxidation at exceptionally high temperatures, and retain their tremendous strength. But the thing they do best is last long and keep down replacement costs.

Whatever your requirements for stainless steels, there is an ARMCO type and finish that will do just what you want it to do, easily, economically and profitably. Our complete metallurgical facilities are at your disposal. Just write and suggest how you want us to help. The American Rolling Mill Company, Executive Offices: Middletown, Ohio.

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As the Editor Views the News

AS 1935 sings its swan song, industry—while mindful of the fact that the old year was good—looks forward to 1936 with the expectation that it will be better. The consensus of opinion among those who venture definite predictions seems to be that the physical volume of business will be up by about 10 per cent. Opinion also is almost unanimous that the general trend of prices will be upward. Nevertheless, many of the forecasters are noticeably restrained in their optimism. They believe that the old cycles still are effective and that 1936 will witness a zig-zag business trend.

• • •

More Room for Bureaucracy!

In commenting on the outlook for 1936, Ernest T. Weir, (p. 9) declares that the character of recovery to date is encouraging but that we still face the serious handicap of too much government interference. Point was given to the last part of this remark when on Friday the daily press announced that four cabinet members are favorable to a plan for creating 12 or more regional sub-capitals—miniature Washingtons, so to speak. Possibly this is merely a trial balloon. It sounds like the tentative gesture of serious-minded new dealers who want to build a broader base for federal government bureaucracy.

• • •

Public Reaction Will Come

If the desire of Messrs. Ickes, Wallace and Roper and Madame Perkins to establish regional sub-capitals is sincere, it means that they believe that the present far-flung activities of the federal government are to be permanent. Doubtless in all earnestness, these cabinet members think that henceforth the requirements of this nation will call for the present expanded paternalism of government. This is a dangerous state of mind. The public should and probably will in the end, rebel against this thought. Every public official in Washington should realize that much of the federal activity of the past three years was tolerated by the people as a temporary measure only. To try to usurp temporary grants for the purpose of establishing long-term bureaucracy is nothing short of a shameful abuse of the trust of the public in its administrative officials.

• • •

Harbingers of New Year

One gratifying index of the improvement recorded in business during the past year was the resumption last week of the payment of Christmas bonuses (p. 9) by a number of companies. . . . True to expectation, the rising curve of electric power output crossed the two-billion kilowatt-hour mark (p. 20) in the week ending Dec. 21. This is remarkable when it is considered that the highest weekly output prior to 1935 was 1,860,000,000 kilowatt-hours as of the week ending Dec. 21, 1929. . . . Apparently the turn of the year is considered a propitious time to make shifts and promotions in the personnel of industry. This week STEEL's pages (p. 16) are crowded with personal items.

• • •

Research in Pure Iron?

Few persons outside of metallurgical circles realize the extent to which small amounts of impurities may alter the properties of common metals. In the case of ferrous metals the difference between commercial iron with its impurities and chemically pure iron is marked—so much so that the iron alloys committee of the Engineering Foundation (p. 29) is urging that industry engage in scientific research to determine the properties of pure iron. Since chemically pure iron has never been prepared in usable quantities, it is possible that research along the lines suggested may open up new opportunities for the American iron and steel industry. The industry's stake in alloy irons and steels is such as to warrant a liberal expenditure for the investigation of pure iron.

E. L. Shaner

Purchasing Agents Approach 1936 with Marked Confidence

UNANIMOUSLY optimistic, although varying in degree, are the forecasts on 1936 business received by the National Association of Purchasing Agents, New York, in response to a roundup of opinion of representative purchasing agents.

Summarized, these buyers whose policies are frequently conclusive on trends believe that 1936 will generate better volume than 1935, that basic factors making for increased commodity prices are in the ascendancy, that legislative uncertainties of the new deal and the operation of the social security act are serious though not fatal hobbles, and that industry will begin to capitalize, with a relatively small gain in volume, on economies forced by the depression.

Typical statements by purchasing agents and executives and quoted in the current *Bulletin* include:

Donald G. Clark, purchasing agent, Brown & Sharpe Mfg. Co., Providence, R. I.:

We may approach 1936 with a little more confidence than we had a year ago because 1935, after all, hasn't been such a bad year; at least, not compared with its three or four immediate predecessors.

There certainly is a new confidence in business. And yet when we look forward to 1936, it is with a cautious, even timid sort of confidence.

The possibility of hasty, ill-considered legislation affecting business vitally casts a shadow on the picture. The taxes imposed under the social security act loom as a very probable hobble to forward progress. There are many other factors to restrain one from unbounded optimism.

If we must forecast, our guess would be: A fairly good first quarter, some recession in the spring and summer, and then the election is on, and your guess is as good as mine. As a buyer, I am not committing myself too far ahead in 1936. But I have hopes.

Fred J. Heaslip, purchasing agent, Fairbanks, Morse & Co., Chicago:

Thoroughly clear of the maelstrom of the 1931-3 period, industry of this country is now in an excellent position to reap the reward of efficiencies that were introduced during the recent years of stress.

The elimination of needless outlays and the resultant reduction in costs and improvement in methods of production and distribution are now standing many concerns in good stead. Some dividends should be resumed, others increased.

From present indications, and taking the happenings of the past four to six months into full consideration, it would seem that a moderate but irregular upward movement should continue in the trend of general business activity during the 12 months to come.

During the past year business volume has reached a much sounder level without commodity prices being more than moderately advanced. It is being rather definitely proven also that unsound price advances will meet with sharp resistance from consumers. However, during 1936 it is expected that the trend of commodity prices will work upward and many materials should be under commitment for at least the first three to four months of the new year.

H. C. Shafer, purchasing agent, Timken-Detroit Axle Co., Detroit:

I can only see gradually increased prices during 1936, if everything we buy is considered as a whole. Revamped plants made more efficient will tend to keep prices down; also, fear of competition and loss of business will preclude excessive price increases.

As business improves and confidence is restored, vendors will insist on sufficient increases to assure profits, and buyers will be willing to accept justified increases.

Transportation costs, labor rates, basic commodity prices, are all inevitable factors tending to raise prices but with utmost caution.

The public are in a good mood to buy what they want and can arrange to pay for; therefore, increased employment and incomes mean more money spent, which means more business.

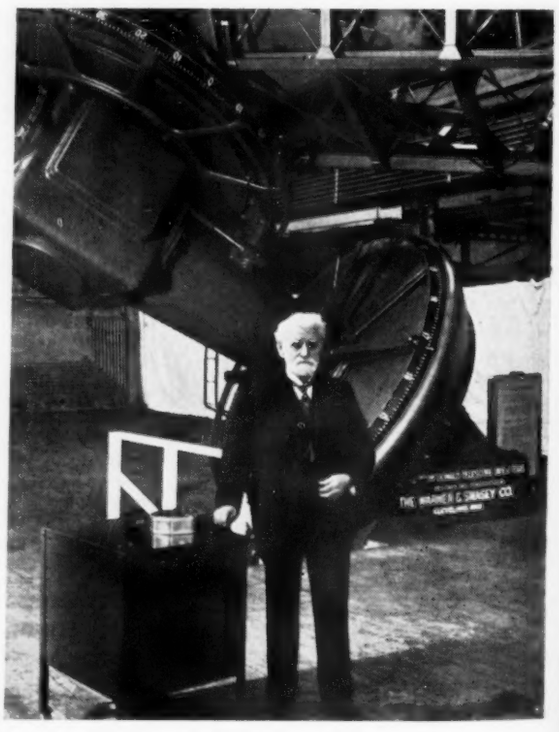
The effect of existing legislation, inflation, and taxes, also what the government will do, is known only to God; but present indications call for extreme watchfulness and caution on the part of business. Politics—either foreign or American—is a strange animal—not well understood by even its trainer.

Alvan T. Simonds, president, Simonds Saw & Steel Co., Fitchburg, Mass.:

Comparing the "whole" year 1936 with the "whole" year 1935, business will be considerably better both in volume and dollars, especially dollars. The following estimates are just guesses, after all.

Residential building up 100 per cent. (It isn't very much now.) Low-priced automobiles up 10 per cent. Medium-priced automobiles up 75 per cent. Cost of living up 20 per cent. Wages (hourly rates) up 15 per cent. Capital goods industries up 50 per cent. Ingot production up 50 per cent. Electric power production up 10 per cent. Car loadings up 15 per cent. Airplane passengers up 25 per cent. Steel prices up 20 per cent. Fisher's Commodity Index up 15 per cent. Interest rates up slightly. Long-term governments

At 89, His Wagon Still Is Hitched to a Star



Ambrose Swasey, chairman of the board, Warner & Swasey Co., Cleveland, standing at the control of the 82-inch McDonald telescope, designed and built by his company, on his 89th birthday, Dec. 19. Mr. Swasey was honored by messages from important civic and industrial leaders on his birthday. Over 100 leading citizens of Cleveland feted him at a luncheon as a man who, internationally known as a builder of turret lathes and telescopes, has brought renown to Cleveland

down slightly. Common stocks up 30 per cent.

And if business is good nobody can beat Roosevelt. Roosevelt will cater to business and not business to Roosevelt.

Perhaps not in 1936, but at least in six years, three-quarters of the distinctly Roosevelt program will be thrown in the waste basket where it belongs.

The price of gold in dollars will remain at $35, but in the next severe depression, perhaps many years away, will necessarily be raised again.

Don't buy long-term maturities in dollars, whether government bonds or annuities. Buy common stocks, real estate or commodities.

And don't forget that not more than 50 per cent of the profits that you make will be any better than paper profits just as they were before.

W. W. MacMillen, director of purchases, National Malleable & Steel Castings Co., Cleveland:

I believe general business conditions will be better in 1936. Home building, railroad buying and the machine tool industry will all show much improvement. Coal and ore shipments will be larger. I look for an increase in scrap prices and some finished steel lines. General com-

(Please turn to Page 58)

Companies Pay Christmas Bonus

BONUSES distributed by equipment and steel manufacturers at Christmas time are a harbinger of improved business.

Mesta Machine Co., West Homestead, Pa., paid a $112,000 Christmas bonus to all salaried employes, an average of $500 for each of the 225 white collar workers and amounting to two months' pay to every salaried employe with the company for nine months or over and proportionately less for each one employed less than nine months.

Continental Can Co., New York, distributed approximately $250,000 to its 13,000 regular factory and salaried employes.

Firth-Sterling Steel Co., McKeesport, Pa., distributed a half-month's extra salary to more than 100 office workers as a Christmas bonus.

General Motors Corp., Detroit, shared "an appreciation fund" of $5,000,000 among 200,000 employes, all workers except those eligible for the corporation bonus fund, provided they were in service on July 1, receiving $25.

Peninsular Steel Co., Cleveland, gave its employes working with the company a year or more, one month's salary, and employes working less than a year, two weeks' salary.

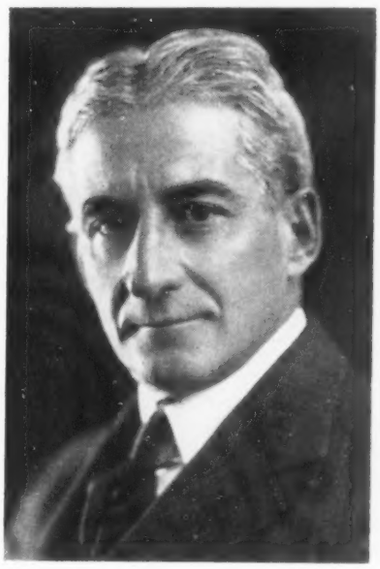
Politics Menace to Recovery, Says Weir; Swope Scans 1935

A BACKWARD look into 1935 is taken by such representative leaders of industry as Ernest T. Weir, chairman of the National Steel Corp., Pittsburgh, and Gerard Swope, president of the General Electric Co., Schenectady, N. Y.

Mr. Weir continues to point to governmental interference with business as a major evil, saying:

The closing year has witnessed marked gains in general business conditions. The steel industry has participated in this movement, with an average production slightly less than 50 per cent of capacity—a level which is still considerably below that of normally "good" years, but which, of course, is above depression low points.

If purely business factors were all that had to be considered in appraising the present situation or the prospects of the immediate future, we would have every reason to believe that these business gains have been made on solid ground. The country seems to have reached the point, so plainly marked in the records of previous depressions, where natural forces of recovery have gained enough strength to overbalance the forces of depression and start a sustained upward movement.



Gerard Swope

The one serious obstacle to such a development, in my opinion, is the continuance of political interference with the normal workings of the business system. Such interference has impeded recovery to date, because it has been a constant disturbance and threat which has undermined the confidence of business men and created undue business risks.

It will be unfortunate if these political influences are permitted to continue their interference with the economic restoration of the country. Viewed from a depression standpoint, the present gain may be impressive. It must be remembered, however, that re-employment of the millions still unemployed depends upon stimulation of much greater activity in the *normal* processes of business and industry than we have at present. This can come only under conditions that give a reasonable assurance of economic stability.

Ernest T. Weir

Mr. Swope emphasizes the need for revival of the capital or durable goods industries:

The volume of electrical manufacturing business in 1935 was approximately 30 per cent greater than in 1934, which was about the same increase as was shown for 1934 over 1933.

Consumption of electricity in the United States was the greatest in the history of the country, being about 7 per cent more than in 1934 and 3 per cent more than in 1929, the previous peak year. As I said last year, this has been due largely to increased use of electrical appliances in the home.

Orders for capital goods in the electrical manufacturing industry have not increased to any great ex-

tent, because of the difficult position of the public utilities and transportation companies throughout the United States. Practically the only increase in the production of capital goods has been brought about by the modernization of industrial plants.

Successive increases in the use of electricity must eventually mean an increase in the generating capacity of public utilities, which will bring an increase in orders for capital goods to the electrical manufacturing industry.

For the year 1936 we look forward to a continued improvement in business.

Exports Gain in November and Year

ALTHOUGH total exports of steel and iron products in November, at 205,242 gross tons, were 33,116 tons less than the 238,358 tons shipped abroad in October, there was a gain of 7773 tons in exports other than scrap, according to the metals and minerals division of the department of commerce.

Scrap exports in November were 104,961 gross tons, compared with 145,850 tons in October, a decline of 40,889 tons, which more than accounts for the total shrinkage stated above.

For 11 months of 1935 total exports of steel and iron were 2,828,067 gross tons, compared with 2,549,760 tons in the corresponding period of 1934. In the same period scrap exports in 1935 were 1,902,420 tons, and in 1934 they were 1,639,193 tons. The gain in total exports thus was 278,307 tons for the 11 months, compared with growth of 263,236 tons in scrap. This gives a surplus of 15,071 gross tons in manufactured iron and steel products during 11 months of 1935.

Increased tonnage of a number of items, each small, accounts for the gain in the November total of manufactured exports, while the same condition applies to losses, the net result being a slight growth in outgoing manufactured articles. No marked change took place in any single classification.

Statistics on steel and iron imports will be presented as soon as available, probably in the next issue of STEEL.

Bethlehem Jan. 1 Ends Names of Subsidiaries

Beginning Jan. 1 the Bethlehem Steel Co., Bethlehem, Pa., will conduct under its own name the business now being done by three subsidiaries—McClintic-Marshall Corp., Kalman Steel Co., and Pacific Coast Steel Corp. This is for the purpose of simplifying the corporate structure of Bethlehem and expediting the conduct of its business.

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	Nov. 1935	Oct. 1935	Jan. 1935
Pig iron	352	125	3,041
Ferromanganese and spiegeleisen	42	47	131
Iron and steel scrap	104,961	145,850	1,902,429
Tin plate scrap	3,165	2,108	35,924
Waste-waste tin plate	2,420	2,489	21,081
Ingots, blooms, etc.	2,246	1,609	39,050
Bars, iron	129	132	1,050
Bars, steel	3,798	6,176	48,811
Bars, alloy steel	425	357	2,642
Wire rods	1,796	2,473	23,147
Boiler plate	81	55	1,261
Other plate, not fab.	4,141	4,764	37,352
Skelp, iron or steel	15,642	13,212	61,131
Iron sheet, galv.	162	237	1,794
Steel sheets, galv.	5,855	4,211	65,272
Steel sheets, black	9,592	6,646	92,812
Iron sheets, black	412	594	5,092
Strip steel, cold-rolled	2,009	2,895	18,266
Strip steel, hot-rolled	2,261	1,908	22,988
Tin plate, taggers' tin	13,330	12,444	113,289
Terneplate	149	270	2,132
Tanks, except lined, etc.	1,584	401	6,679
Shapes, not fab.	4,089	3,649	32,577
Shapes, fabricated	544	605	14,301
Plates, fabricated	351	86	1,575
Metal lath	50	92	752
Frames, sashes, and sheet piling	487	269	4,492
Rails, 50 pounds and over	4,164	1,504	40,805
Rails, under 50 pounds	835	7	3,746
Rail fastenings	456	466	4,936
Switches, frogs, crossings	66	54	1,204
Railroad spikes	291	141	2,316
Railroad bolts, nuts	52	38	483
Boiler tubes, seamless	492	765	7,510
Boiler tubes, welded	13	28	602
Casing and oil-line pipe, seamless	616	1,068	17,602
Do, welded	57	438	4,450
Seamless black pipe, other than casing	141	227	2,536
Malleable-iron screwed pipe fitt'gs	227	387	3,191
Cast-iron, do	104	230	1,713
Cast-iron pressure pipe, and fittings for	1,024	2,340	10,961
Cast-iron soil pipe, and fittings for	783	210	4,327
Welded black steel pipe	1,088	1,146	15,097
Welded black wr'ght-iron pipe	110	170	1,949
Welded galv. steel pipe	979	774	15,290
Welded galv. wr'ght-iron pipe	111	88	1,026
Riveted iron or steel pipe and fittings	76	14	443
Plain iron or steel wire	1,370	2,342	15,286
Galvanized wire	2,013	2,481	20,600
Barbed wire	2,768	3,490	28,758
Woven-wire fencing	225	181	1,974
Woven-wire screen cloth	60	95	938
Wire rope	480	196	3,780
Other wire and mfrs.	508	538	4,820
Wire nails	1,100	1,041	10,081
Horseshoe nails	68	62	585
Tacks	44	43	390
Other nails, including staples	180	225	2,436
Ordinary bolts, machine screws, rivets, washers	503	538	5,889
Iron castings	966	855	8,486
Steel castings	251	164	2,550
Car wheels and axles	2,156	1,543	16,270
Horseshoes	9	3	162
Iron and steel forgings, n.e.s.	783	762	5,804
	205,242	238,358	2,828,067

Production

STEELMAKING pushed back 4 points last week to 48 per cent, due principally to holiday influences. This is the first time since the second week of August that the rate has gone below the 50 per cent level. Youngstown was the only district to register an increase last week, all other districts easing downward or remaining firm. A slight rebound may be expected this week, as indicated by tentative schedules at Youngstown and Cleveland. Further details follow:

Youngstown—Gained 3 points to 59 per cent last week, and the rate is expected to reach 61 per cent at this week's opening, on resumption of three open-hearth furnaces at the Brier Hill plant of the Youngstown Sheet & Tube Co. The Brier Hill furnaces have operated for only about 20 weeks during the last four years.

New England—Sagged 6 points to 77 per cent last week, and little change is expected this week.

Chicago—Declined more than 10 points to an average of 50 per cent last week. While mill shutdowns generally were limited to Christmas day, eight open-hearth furnaces withdrawn by Inland Steel Co. will remain inactive for several weeks, to accommodate improvements to a blooming mill.

Buffalo—Off 3 points to 47 per cent last week, owing to shutdowns over the holiday. This week operations will rebound to 50 per cent.

Cleveland-Lorain—Steelworks operations will rebound to 72 per cent beginning this week. Last week the rate was 40 per cent. National Tube Co., Lorain, again will have 11 open hearths in operation, Republic Steel Corp. 9, and Otis Steel Co. 8. National Tube has blown out one of its three active stacks for relining.

Birmingham—Steelmaking was disturbed but little the past week by reason of the holiday, inasmuch as

Steelmaking Operations

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Dec. 28	Change	Same week 1934	Same week 1933
Pittsburgh	34	— 6	25	27
Chicago	50	—10½	42	40
Eastern Pa.	34½	— 1	19½	24½
Youngstown	59	+ 3	47	38
Wheeling	70	— 8	80	41
Cleveland	40	—42	61	45
Buffalo	47	— 3	39	37
Birmingham	56	none	26½	52
New England	77	— 6	55	72
Detroit	88	none	59	52
	48	— 4	39	36

the Tennessee Coal, Iron & Railroad Co. operated its Ensley works Sunday. Twelve open-hearth furnaces are scheduled for this week.

Central eastern seaboard—Off 1 point to 34½ per cent, with no material reduction expected this week.

Pittsburgh—Off 6 points to 34 per cent last week, the decline being attributable to the Dec. 25 holiday. The leading interest operated at about 28-30 per cent, and a leading independent at 40 per cent. For this week operations probably will hold at about the 34 per cent level.

Twenty-six out of 60 steelworks stacks are now active, Jones & Laughlin having banked an Eliza furnace. Carnegie-Illinois has 12 of 32 on; Jones & Laughlin, 6 of 11; Bethlehem, at Johnstown, Pa., 3 of 7; and American Steel & Wire, National Tube, Pittsburgh Crucible Steel, and Pittsburgh Steel, one each.

Wheeling—Off 8 points last week to 70 per cent, with 26 out of 37 open-hearth furnaces on. Although two producers here observed Dec. 25 only as a holiday, a third shut down one of its open-hearth works and six units for the balance of the week.

Detroit—Unchanged at 88 per cent, as 15 out of 17 open-hearth furnaces continue on schedule here.

Ford Motor Co. now has its new wide hot-strip mill in production and is tuning up its cold finishing mill. When both are operating at full capacity, their combined output will be 1500 tons daily, sufficient steel for 3000 cars daily.

Westinghouse Opens Golden Jubilee Year Jan. 8 with Record Broadcast

IN COMMEMORATION of its fiftieth birthday Jan. 8, the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., will hold a family gathering of its 12,000 employes in the Pittsburgh district, with simultaneous meetings of Westinghouse employes in every Westinghouse factory and office in the country. These employes, in all 40,000, will listen to a broadcast over Westinghouse on its own short wave transmitter W8XK, from about 8 to 10:30 p. m.

Officials To Review Progress

A. W. Robertson, chairman of Westinghouse; F. A. Merrick, president, and other national figures will review the important contributions that Westinghouse has made to the progress of industry and will present a forecast of the future. Westinghouse's new institutional sound picture, "The New Frontiers", will be shown to employes for the first time.

Incorporated on Jan. 8, 1886, Westinghouse began operations the following March in a small factory building in downtown Pittsburgh. Its first payroll listed 200 employes.

Today, 50 years later, it operates 19 plants, normally employs over 40,000 people, its annual sales amount to about $180,000,000, and the Westinghouse International Co. is represented in more than 80 countries.

The first catalog of the company listed 13 items; its present catalogs, hundreds of thousands.

Founded to develop electrical products in a day when electrical service was a hazy promise, Westinghouse became the advocate of the alternating-current system. It started the development of apparatus by which electrical energy could be generated, transformed for transmission to distant points, then reduced to pressures suitable for lighting and power purposes.

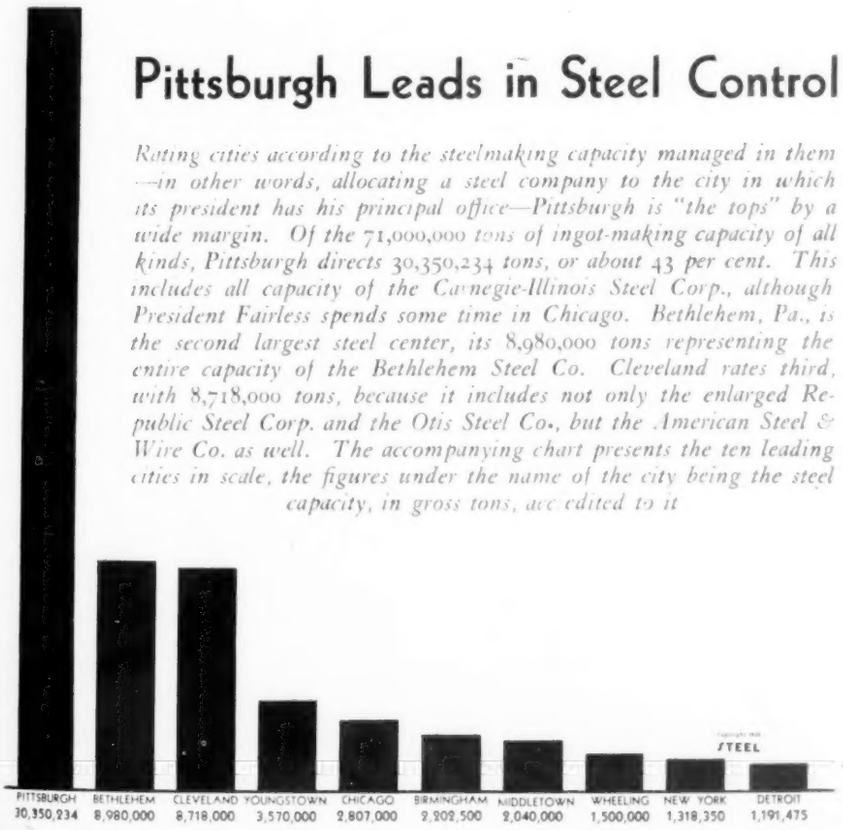
Westinghouse won the contract for lighting the Columbian exposition in Chicago in 1893, which involved the manufacture of 250,000 lamps and the installation of alternating-current machinery.

In 1894, Westinghouse offered the first induction motor for commercial use. In 1895 it harnessed Niagara.

In the introduction of the turbine as a prime mover for electrical generators in radio broadcasting, research for more intensive use of electricity in the home, the electrification of steamships and warships, Westinghouse also was prominent.

Pittsburgh Leads in Steel Control

Rating cities according to the steelmaking capacity managed in them —in other words, allocating a steel company to the city in which its president has his principal office—Pittsburgh is "the tops" by a wide margin. Of the 71,000,000 tons of ingot-making capacity of all kinds, Pittsburgh directs 30,350,234 tons, or about 43 per cent. This includes all capacity of the Carnegie-Illinois Steel Corp., although President Fairless spends some time in Chicago. Bethlehem, Pa., is the second largest steel center, its 8,980,000 tons representing the entire capacity of the Bethlehem Steel Co. Cleveland rates third, with 8,718,000 tons, because it includes not only the enlarged Republic Steel Corp. and the Otis Steel Co., but the American Steel & Wire Co. as well. The accompanying chart presents the ten leading cities in scale, the figures under the name of the city being the steel capacity, in gross tons, accredited to it



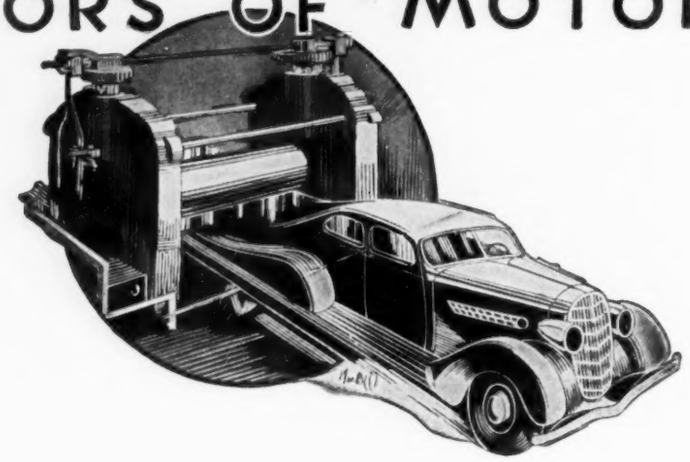
United Buys Wooster Division of Mackintosh

Federal court at Pittsburgh, Dec. 23, approved the plan of the Mackintosh-Hemphill Co. management to sell its Wooster, O., division to the United Engineering & Foundry Co., also of Pittsburgh. The offer made by the United company is $550,000, and the proceeds are to be turned over to the Union Trust Co., Pittsburgh, for application against Mackintosh-Hemphill bonds.

The Mackintosh-Hemphill company, which is in arrearage on its bond interest for sinking fund requirements, sought to enter reorganization proceedings under Section 77B of the bankruptcy act early in December rather than permit a bondholders' protective committee to accept the offer of an undisclosed buyer for its entire properties.

When asked by federal court at Pittsburgh to produce an alternate plan rather than enter bankruptcy, the Mackintosh management brought forth the offer for its Wooster division.

MIRRORS OF MOTORDOM



DETROIT

IN ONE way, the motor industry shows it is not quite so sanguine as the new year commences. Partly through the weakness in sheet and strip prices here and partly because any serious labor difficulties or strikes do not appear imminent, there have been several important cut-backs in the parts "float."

A month ago the automobile industry was sailing along, saying it carried at least three to four weeks' supply of parts in stock or in transit. General Motors had come out with the avowed intent to carry some $60,000,000 in parts inventories, and this was exemplary.

But automotive executives are thinking right now in terms of February, not January. They are set to take in a reef if it appears February new-car demand will be paying the piper somewhat for those heavy November and December car sales.

Sheet Cut Spreads Rapidly

They also have seen a rather general reduction of $3 a ton on most grades of sheets used by the automobile industry spread openly to this town's important tonnage accounts. The price weakness started with cuts offered to one of the important Chevrolet divisions four to five weeks ago and, as usual, it could not be kept under cover. By a week ago practically all of Chevrolet's competitors had picked up the scent and written down their contracts.

At first, the concessions were understood to be simply for the remainder of the fourth quarter, now ending, with the understanding that contracts would be written up again to the full published market for the first quarter of 1936.

But the best laid plans ran into unchanged extensions for early 1936, and that, so the story goes, for more than any other reason precluded the general steel price advance everyone had come to expect for the first quarter.

But to return to the second reason for the cut-back in its parts "float." The labor situation here seems well in hand. Since bottlenecks on parts manufacture are more and more disappearing and the motor industry has been diversifying its sources of supply since 1934, less need exists to build up inventories as a protective measure.

For example, the only recent important strike in Detroit, that at Motor Products, was not exactly what an old-timer would call a strike. There was always at least one shift working and Ford, Chrysler, Hudson, and the others that drew on Motor Products for parts had also covered themselves by going to other outside sources.

Lose Little Holiday Time

Consequently, the humanitarianism of General Motors and others to tie up extra millions of cash in parts may be all very well, but well-informed circles in Detroit think the motor industry has a weather eye peeled for a critical sales period about 45 to 60 days ahead.

At any rate, last week did not look like much of a holiday around the motor plants. Usually, late December sees many two-week shutdowns, but this year the assembly lines in most cases ran right up to 5 o'clock Dec. 24, and they started again promptly Thursday morning.

Many motor companies took their inventories in October this year, just preparatory to staring to work on the 1936 jobs. In other times, where new models were put into production in December, inventories were of course taken in that month.

To be sure, inventories and other vital financial data will be reported as of Dec. 31 this year, as in former years. Running accounts are always kept. But "inventory time" the automobile industry has come to construe as plant repair and rehabilitation, office vacation, and general breathing spell, all wraped up in one package. This year, the siesta came in October, not last week.

Withal, there continues to be considerable work going on in the plants here other than that of making cars. A number of new conveyor systems, paint booths, heating furnaces, etc. have been bought by the motor and parts plants. As related last week, many like Fisher already have worked out much of their 1937 retooling programs.

Obviously, the machine tool business is cheered over expenditures like this, but it is running into a new tactic, which seriously puts a crimp in some new machine tool sales.

The motor car makers wanting, say, a new press will get an appropriation after some red tape. Inquiries will be sent out, bids taken, and the machine awarded.

But payment may not be made in cash. Instead, the successful bidder will be asked to look over some used machinery in another corner of the plant and a trade will be arranged. If the machine tool builder balks a third party in the form of a used machinery dealer will be called into the deal, and it will go through.

Swap Rules Standard Tools

This is not to infer that all machine tool purchases here are forced in that way, for a large amount of equipment the motor industry buys is special machinery and must be built to a special specification, and because of risks is sold for cash payment. But on run-of-mine units, like presses, millers, lathes, etc., adapted to a wide and general line of work, the swapping racket is now being worked. Apparently, it is an effective means for the buyer to balance out many of his plant items.

Very slowly, Pontiac is reopening

at Pontiac its foundry division that has been closed for three years. It was a depression expedient that resulted in its being closed in 1932, for at that time Chevrolet took all of the Pontiac casting work under its wing at Saginaw, about the same time that Buick did the same thing for Olds.

By soon after New Year the Pontiac division should be pouring at about 20 per cent of capacity, a slow rate to be sure, but because Chevrolet has a number of Pontiac castings made up and in store.

Recovery is slow for another reason—due to expenditures for retooling and reconstruction that total about $500,000. Foundry practice is being changed, and much of it will not be finished until about Jan. 15.

In fact, motor block casting will not start until February, and only small parts are being cast now. One of four cupolas and one of seven lines are in production at present. But before long, capacity will be raised to 400 tons for a 9-hour day, which will be enough to make 650 engine blocks, complete with heads, manifolds, clutch housings and flywheels.

The ratio of castings to rolled steel in the average automobile runs about 1 to 3½ pounds. In the present Ford it runs slightly more. Taking today's Plymouth, as a representative, this contains around 1700 pounds of steel in various rolled steel forms to 500 pounds of castings.

Build Against Interruption

The larger portion of the 500 pounds is in the motor block, but the trend the last few years has been to more castings, laminated cast brake drums being something not in general use even five years back. The biggest steel item that cast brake drums replaced was cold-rolled strip steel.

Motordom's parts suppliers, and especially the makers of panels and small body parts, pricked up their ears last week when the General Motors high command broke a story that it was spending $7,000,000 on a parts division for its own subsidiaries at Grand Rapids, Mich.

A couple of weeks ago, Detroit heard that Fisher Body had acquired title to a tract there and it was not many days later that Edward F. Fisher, general manager of Fisher Body, confirmed that the division would not only make a complete line of panels and other parts but would also manufacture large stamping dies and tools.

The idea seems to be that the equipment to be installed will be for emergency production at any time that breakdowns, or other unavoidable delays, interfere with other sources.

The Grand Rapids Fisher plant is to have capacity for 2000 complete sets of stampings daily, and the first unit will be in production in March. Fisher has already bought four turret top presses, each weighing 400 to 500 tons and 4½ stories high.

Between the lines, Detroit reads two objectives into the Fisher announcement. It builds up protective armor against delays that might interrupt assemblies. Furthermore, it is a manifestation of overflowing working capital in the motor industry that is virtually as great as it was in 1929.

Must Spend To Hold Lead

On Oct. 1, 1935, ten automobile makers, exclusive of Ford, had roughly $447,000,000 in working capital. By the end of 1935 the total was about $385,000,000, whereas at the close of 1929 it was $500,000,000. Ford's figures are reliably believed to follow this same showing.

This vast total of working capital will soon begin to be used, especially by Ford, General Motors, and Chrysler to enlarge plant facilities. These three, having made about 90 per cent of all automobile sales through the depression and convinced that the next few years' demand for cars will retain this leadership for them, will soon have to step out and expand if they want to hold that percentage.

In other words, the "big three" made only 76 per cent of the 1929 total of 5,500,000 cars, and if conditions in this industry are to return to that level by, say, 1937, considerable enlargement will be necessary to hold on to the 90 per cent figure.

The country in the depths of the depression grew to favor low-price transportation. Now, on the way out of the low levels, the low-price car makers seem convinced they will not lose their grip on the market.

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1933	1934	1935
Jan.	128,825	155,666	292,817
Feb.	105,447	230,256	335,700
Mar.	115,272	338,434	429,834
Apr.	176,432	352,975	477,746
May	214,411	330,455	364,727
June	249,727	306,477	361,321
July	229,357	264,933	337,044
Aug.	232,855	234,811	240,051
Sept.	191,800	170,007	89,805
Oct.	134,683	131,991	275,021
Nov.	60,683	83,482	398,024
11 mo.	1,839,492	2,599,487	3,602,090
Dec.	80,565	153,624	.....
Year	1,920,057	2,753,111	.....

Estimated by *Cram's Reports*

Week ended:

Dec. 7	93,180
Dec. 14	98,582
Dec. 21	103,600
Dec. 28	71,335

Activities of Steel Users and Makers

REPUBLIC STEEL CORP. is removing its Cleveland district sales office from the Union Trust building to 920 Republic building, effective Dec. 30. All general offices of Republic will shortly be moved there. W. E. Collier continues in charge of the office as district sales manager.

◆ ◆ ◆

Whitney Mfg. Co., Hartford, Conn., manufacturer of roller, silent, block and conveyor chains and sprockets for 35 years, will change its corporate name to the Whitney Chain & Mfg. Co., effective Jan. 1. No change in company policy or product is involved.

◆ ◆ ◆

General Electric Co., Schenectady, N. Y., has completed the disposal of its foundry holdings in Elizabeth, N. J., with the recent sale of buildings 1, 4, 4A, 5, 6 and 8 to Beck Koller & Co. Inc., Detroit. Buildings 2 and 3 of the Elizabeth foundry property were disposed of several weeks ago to the New Jersey Metals Co., Newark, N. J.

◆ ◆ ◆

Richard Thomas & Co. Ltd., of England, has been granted a license by the American Rolling Mill Co., Middletown, O., to use its Tytus continuous sheet rolling patents and cross rolling patents. Richard Thomas & Co. is the largest manufacturer of tin plate in England. The company is ordering machinery for a complete hot and cold continuous mill unit from United States manufacturers. The new mill, which will probably be constructed at Ebbw-Vale, Wales, is estimated to cost $5,000,000.

The American Rolling Mill Co. recently licensed Vereinigte Stahlwarke, Germany, to use its continuous sheet rolling and cross rolling patents.

Dutch Iron Leads Imports

Outstanding in iron and steel importations at Philadelphia during the week ended Dec. 21 were 3410 tons of pig iron from the Netherlands. Other importations included 113 tons of sponge iron, 54 tons of steel tubes, 46 tons of steel wire, 30 tons of steel bars, two tons of steel billets and one ton of steel forgings, all from Sweden.

WINDOWS OF WASHINGTON

WASHINGTON

NRA and the office of the administrator have been "terminated" as of Jan. 1. This was set forth in an executive order issued last week by the President.

Personnel of the organization—such as will be left after Jan. 1—including some 1200 persons, has been transferred to the departments of commerce and labor.

All will go to commerce except the consumers division, which goes to labor, and the latter includes only some 30 persons.

Actual work of deflating the NRA will be taken in charge by Assistant Secretary of Commerce Draper, as suggested in this column some time ago.

One of the things that interests almost everyone is, "what becomes of Major Berry?" So far no good answer has been found. He is still "co-ordinator of industrial co-operation."

Berry "Just Continues"

At a recent press conference when the President was asked where the major would fit into the picture, he simply answered "perfectly." At a press conference after the executive order was issued and no mention was made of Major Berry, the President was asked the same question and his answer was, in not his normal way of speaking, "Major Berry just continues."

Some who have been watching this matter closely and who are of the opinion that the President is fed up with the major took the President's tone of voice to substantiate their view. At any rate, the major will have one more try at his "co-operative" idea on Jan. 6, when his industrial council meets.

The division of review, the division of business co-operation, and the advisory council of NRA with all of their officers and equipment "are hereby transferred to the department of commerce," says the executive order.

"The secretary of commerce is authorized and directed," it continues, "under the general direction of the President to appoint, employ, discharge, and fix the compensation and define the duties and direct the conduct of all officers and employes engaged in the administration of the agencies transferred by this order to the department of commerce, to exercise and perform in connection with the said agencies the functions and duties now exercised and performed, or authorized to be exercised and performed, by the national recovery administration, to report to the President on all matters relating thereto, and to terminate the functions and duties of the said agencies not later than April 1, 1936."

Similar provision is also made in placing the consumers division under the department of labor.

All previous orders issued in connection with NRA have been modified to conform to this latest order.

From now on, unless as a matter of history, there will be no further reference to NRA. The work of the "studies" in various industries will come under the department of commerce, with very strong chances that their tone will be materially changed unless the studies have gone too far for any change, as they undoubtedly have in some cases.

Threat Forced President's Hand

Inquiry already is being made in some quarters whether the technical abolition of NRA throws any light whatever on the future intentions of the administration with respect to new legislation for the regimentation of industry.

There has been a lot of speculation here recently in connection with the dismissal of 1200 NRA employes slated for Jan. 1.

The inside story is that certain influential members of both the house and senate who are already in Washington for the coming session served notice on the administration that if the personnel of that organization was not cut materially before congress convened that they would pass a resolution at once dissolving the whole organization.

Some such thing must have happened, because NRA has gone along for months now with only incidental dismissals and nothing on any wholesale plan such as that recently ordered.

While the wish may be father to the thought, there are many who believe that the issuance of the executive order means the death knell of Major Berry's hopes, because it is definitely known that he made every effort to stop its being issued. He was most anxious to get hold of all or as much of the organization as possible under his personal rule.

ONLY FOUR DAYS MORE UNTIL CONGRESS CONVENES

On Friday of this week, congress will be back with us again. In accordance with the recent revision of the constitution on this point, this is only the second time in the history of the country that congress has convened on Jan. 3. On Jan. 20 of next year the President will be inaugurated, and that will be the first time that any inauguration has been held on that date.

The United States Supreme Court is expediting ruling on the question of the constitutionality of the Guffey coal act. It has taken the case directly from one of the lower courts, and the Supreme Court will hear argument on it in January or February.

The court, of course, is also to rule on the constitutionality of the Wagner labor act and the AAA act during this session. That means that probably before congress adjourns the new deal will know just where it stands on some of its pet projects, and will be able to pass further leg-

islation if that seems necessary before adjournment.

The national labor relations board has decided to make an immediate appeal of the decision of the Kansas City federal court holding that the Wagner act is unconstitutional. In this case Federal Judge M. E. Otis issued a temporary injunction to the Majestic Flour Mills, of Aurora, Mo.

The labor board had cited the company for alleged refusal to bargain a wage and hour agreement with an employes union. This case, it is stated, offers a quicker chance for the administration to get a constitutional question before the Supreme Court than any of the other pending cases.

ROPER HOPES TO STAY IN CABINET ANOTHER YEAR

There are renewed reports here that Secretary Roper is going to move. Many people believe that when Postmaster General Farley retires—the date is still a matter of conjecture—Mr. Roper will go to the postoffice department. However, he has told personal friends that he does not want to make this change and will not do it unless directed to by the President.

Mr. Roper has advised some of his close personal friends that his one desire is to stay in the cabinet as secretary of commerce until December, 1936, and then retire regardless of whether or not Mr. Roosevelt is re-elected.

Mr. Roper has lived a very active life, and he is reported as being tired and anxious to take a rest. However, it is known that he is now enjoying his work at the department of commerce and merely has the yen to finish out his four year term as head of that department.

"The continuity of interdependence between business and government is becoming increasingly evident to all." said Mr. Roper recently, discussing the business advisory council and its work.

"However, it is our joint duty, as I see it, to try to work out this relationship through regulatory processes, approved by business advisory men rather than through governmental operations.

"The federal government should not say how the business of the country is to be run and will not, if wise business assistance in regulations can be secured and can be accepted by business and, through their assistance, put into operation.

"Under our form of government, proper regulations should be welcomed for and by all, but it should be a definite objective that should not do anything that business can and will do for itself.

"Our economic and social structure in the future will be so closely interwoven with and dependent upon business that it is the duty of both business men and those administering the federal government to maintain a common viewpoint as to objectives ad methods, study the problems involved jointly for mutual safety, and co-operate in getting and keeping a broad vision and a sympathetic attitude toward just and equitable results for society generally."

SCRAP EXPORTS SHOW LITTLE GAIN IN THIRD QUARTER

A foreign trade analysis made by experts here shows that for the third quarter of this year iron and steel exports made only a moderate gain of 2.8 per cent in value. Iron and steel scrap continued to be the outstanding feature of this trade.

Exports for the nine months totaled 1,698,000 tons, exceeding the 1934 record shipments by 33.2 per cent and the five year average by 256.2 per cent. Bars and rods exports were 14.2 per cent larger than last year, and 10 per cent above the five year average. Exports of castings and forgings exceeded the 1934 quantity by 71.7 per cent and the five year average by 74.5 per cent.

For the third quarter, machinery exports continued to show heavy gains in most categories. The value of electrical machinery and apparatus exports increased 15.2 per cent. Exports of agricultural machinery and implements recorded a heavy increase, 56.1 per cent in value.

Died:

CHARLES F. COLLINS, 67, retired official of the United States Steel Corp., in Miami, Fla., Dec. 23. For seven years prior to his retirement in 1919 he had been raw material manager of the Steel corporation. Before that he had served as purchasing agent for the American Steel & Wire Co. for ten years.

♦ ♦ ♦

Charles H. Franklin, an executive of the Macklin Co., Jackson, Mich., manufacturer of grinding wheels, Nov. 27.

♦ ♦ ♦

W. C. Eakin, 59, district manager in Pittsburgh for the Detroit Alloy Steel Co., in that city, Dec. 19.

♦ ♦ ♦

William Dexter Curtis, 78, president, Dexter Curtis Mfg. Co., Madison, Wis., manufacturer of farm equipment, in that city, Dec. 19.

♦ ♦ ♦

James Goff, 46, manager of the Pittsburgh warehouse of Scully Steel Products Co., subsidiary of United States Steel Corp., at Pittsburgh, Dec. 24.

♦ ♦ ♦

James H. Coleman, 63, Cleveland representative of Tabor Mfg. Co., Philadelphia, manufacturer of foundry machinery, in Cleveland, recently. He had been associated with the Tabor organization for the past 20 years.

♦ ♦ ♦

Henry Payne McIntosh, 89, retired banker of Ceveland, and a director of the Interlake Steamship Co. and the Standard Tool Co., Cleveland, in Jacksonville, Fla., Dec. 24.

♦ ♦ ♦

Ernest W. Whittemore, 59, former secretary-treasurer of National Malleable & Steel Castings Co., Cleveland, in that city, Dec. 25. He had been with National Malleable since his graduation from Yale in 1898, until illness forced his resignation a year ago.

♦ ♦ ♦

William MacGregor, 46, formerly general sales manager, Carborundum Co., Niagara Falls, N. Y., in New York, Dec. 18. Mr. MacGregor came to this country from Scotland as a young man and soon thereafter entered the employ of the Carborundum Co. He advanced rapidly through various ranks to become general sales manager, which position he held in recent years.

♦ ♦ ♦

Gilbert P. McNiff, 50, assistant vice president in charge of operations for National Tube Co., Pittsburgh, in that city, Dec. 21. Mr. McNiff was a lieutenant-colonel in the ordnance department during the war and was in charge of munition manufacture in the Pittsburgh district. He was a member of the American Iron and Steel institute, Duquesne club, and other Pittsburgh clubs.

♦ ♦ ♦

William W. Miller, 55, manager of the industrial department, General Electric Co., in Schenectady, N. Y., Dec. 22. He had been with General Electric continuously since graduation from college in 1897, except for a short interval when he obtained a leave of absence to go to the Spanish-American war. He was a member of the American Institute of Electrical Engineers, the National Electrical Manufacturers association, and a number of other business and civic organizations.

♦ ♦ ♦

William P. Belden, 62, general counsel for the Republic Steel Corp. and the Cleveland-Cliffs Iron Co., Cleveland, in that city, Dec. 23. After graduation from Cornell University Law school in 1895, Mr. Belden began practice at Grand Rapids, Mich., in 1903 moving to Ishpeming, Mich., as legal representative of Cleveland-Cliffs and other iron companies in the region. He remained there until 1917, when he came to Cleveland as general counsel for Cleveland-Cliffs. In 1932 he formed the law firm of Belden, Young & Veach. His most important legal work in the last two years was as counsel in the successful defense of the Republic Steel Corp. and the Corrigan, McKinney merger against the government. He was a director of Republic, Cleveland-Cliffs, and of the Lake Superior & Ishpeming Railway Co.

Industrial Men in the News

Kenneth D. Mann, Executive Vice President, Truscon Steel Co.

He now has complete jurisdiction over every phase of Truscon operations.

Born and educated in Boston, his first experience was with Republic Iron & Steel Co.

Although only 32, he has made rapid rise in the industry since graduation from college.

KENNETH D. MANN who, as reported in STEEL for Nov. 11, has been named executive vice president of the Truscon Steel Co., Youngstown, O., formerly was southern district sales manager of the Republic Steel Corp.

He was born in Boston in 1903, and was graduated with a bachelor of arts degree from Harvard university in 1926. Immediately following his graduation he entered the employ of the Republic Iron & Steel Co., and in 1927 was made manager of the Boston office, in which position he continued until 1930.

When the position of southern distric sales manager of Republic Steel Corp. became vacant in 1930, Mr. Mann was transferred to Birmingham, Ala., to assume this post. He continued in this capacity until Dec. 4, 1935, when he came to Truscon as executive vice president.

Mr. Mann claims two hobbies—golf and shooting.

• • •

Charles L. Wood, formerly vice president and general manager of sales of Carnegie Steel Co., Pittsburgh, and subsequently vice president of United States Steel Corp., from which position he resigned early this year, has become associated with Emanuel & Co., stock brokers.

• • •

Charles E. Mueller, formerly secretary and treasurer, American Hollow Boring Co., Erie, Pa., has recently been elected president to succeed the late J. S. Gillespie. When this firm was organized in 1918 by Mr. Gillespie and Mr. Mueller, the latter was named secretary and treasurer. Prior to the time of organizing this company, Mr. Mueller was connected with the Hays Mfg. Co., for a period of ten years.

Arthur C. Sheriff, who has been in the employ of the company the past seven years, has been named secretary.

• • •

S. J. Klein has been appointed assistant traffic manager in charge of solicitations for the Pittsburgh & West Virginia railroad, Pittsburgh.

• • •

Ray Mack is being transferred from the general office of Carboloy Co., Detroit, manufacturer of carboloy cemented carbide tools and dies, to the Chicago district office, effective Jan. 1, as an addition to the sales personnel covering northern Indiana and Illinois. Other changes include:

J. C. Kent, now in the Detroit district office, who will be added to the sales personnel covering the southern Michigan territory, and J. E. Weldy, Minnesota representative, who will be transferred to the Detroit office as assistant to the district sales manager.

• • •

Glenn Hamilton, formerly superintendent of the gray iron foundry of Hart-Parr Co., Charles City, Iowa, for 20 years, has been appointed superintendent of the new gray iron foundry being erected by the Budd Wheel Co., Detroit, which is expected to be in operation by Jan. 1.

• • •

Brent Wiley has been elected managing director of the Association of Iron and Steel Electrical Engineers, New York, to succeed the late John F. Kelly.

Brent Wiley

A graduate of Rose Polytechnic institute in 1898, with a bachelor of science degree in electrical engineering, and later being awarded a master of science degree, Mr. Wiley has been closely associated with the steel industry for the past 37 years.

After leaving college, he spent one year in the electrical department of the Ohio works of the Carnegie Steel Co., later going to the Homestead works of the same company as the assistant to the electrical superintendent. Leaving the Carnegie company in 1904, Mr. Wiley went with the Wellman-Seaver-Morgan Co., Cleve-

Walter C. Conger
Who is vice president in charge of sales of the Truscon Steel Co., Youngstown, O.

land, as electrical engineer. In 1906 he left this company and became associated with the Westinghouse Electric & Mfg. Co., with which he spent the next 25 years. While affiliated with this company, his duties were largely confined to the development of electrification of the steel industry, which required a great deal of investigation and engineering work.

He has been a member of the association for the past 25 years.

♦ ♦ ♦

B. S. Wright has been appointed vice president of the Curtiss Aeroplane & Motor Co. Inc., in charge of the Buffalo plant.

♦ ♦ ♦

A. J. Baumgardt, formerly controller of the Container Corp. of America, Chicago, has been named president of the Sefton National Fibre Can Co., St. Louis, in which the Container corporation has acquired controlling interest.

♦ ♦ ♦

Ray S. Fox has become affiliated with the pig iron sales department of the Republic Steel Corp., with headquarters in Cleveland. He formerly was manager of the pig iron sales department of the Cleveland-Cliffs Iron Co., and more recently head of R. S. Fox & Co., Cleveland pig iron broker.

♦ ♦ ♦

Del S. Harder, now attached to the staff of Thomas P. Archer, vice president in charge of operations of Fisher Body, Cleveland division of General Motors Corp., Detroit, will be transferred to Grand Rapids, Mich., as resident manager of the new plant to be constructed for the Grand Rapids stamping division of General Motors.

♦ ♦ ♦

L. D. Smith has been elected vice president of Union Steel Castings Co., Pittsburgh, effective Jan. 1, to assist D. V. Sherlock, vice president and general manager, in the extension of sales.

L. D. Smith

Mr. Smith is also vice president of Lewis Foundry & Machine Co., Pittsburgh. Both companies are subsidiaries of Blaw-Knox Co., Blawnox, Pa.

♦ ♦ ♦

C. S. Davis, president, Borg-Warner Corp., Chicago, and Charles R. Hook, president, American Rolling Mill Co., Middletown, O., were named vice presidents of the National Association of Manufacturers at its annual convention held recently.

♦ ♦ ♦

Richard O. Binkowski has returned to the executive staff of the Harnischfeger Corp., Milwaukee, to take charge of the newly-established division for manufacturing pre-fabricated steel homes. Thor Hansen has been appointed production manager, and A. M. Locke sales manager of the division.

♦ ♦ ♦

Lewis B. Lindemuth, consulting metallurgist, formerly with the Bethlehem Steel Co. and the Pennsylvania Steel Co., now is in Australia doing consulting work for the Broken Hill Proprietary Co., and expects to leave there early in January, stopping off in India and England on his return voyage.

♦ ♦ ♦

R. R. Davis, formerly assistant manager of the advertising department of Westinghouse Electric & Mfg. Co., will succeed Ralph Leavenworth, who has resigned as manager, effective Jan. 1. Mr. Davis will have his headquarters at East Pittsburgh, Pa. Mr. Leavenworth will join Fuller & Smith & Ross, Cleveland advertising agency.

♦ ♦ ♦

George E. Pfisterer, who has been manager of the Chicago power show for several years, has been made western representative of Metal Products Exhibits, the permanent exhibition of metals, alloys, plastics and finishes, located in the International building, Rockefeller center, New York. Mr. Pfisterer, with headquarters at 308 West Washington street, Chicago, will cover the territory from Cleveland west.

♦ ♦ ♦

Battelle Memorial institute, Columbus, O., has made a number of additions to its staff, including Wilbur H. Bachman, who has been assigned to the division of physical metallurgy; Joel C. Carpenter, who has been assigned to the division of process metallurgy; Alfred Boyles, who has been assigned to the staff working on problems for the iron and steel industry, and Dr. Iver Igelsrud, who has been added to the division of applied chemistry.

♦ ♦ ♦

J. E. Goble, who has been manager of the export division of Oil Well Supply Co., New York, has been appointed vice president in charge of sales of National Tube Co., with headquarters in Pittsburgh. Mr. Goble succeeds J. J. Kennedy, who is retiring under the United States Steel Corp.'s pension age limit.

W. F. McConnor, who has been assistant general manager of sales of National Tube Co., has been appointed general manager of sales for the company, also with headquarters in Pittsburgh. He succeeds D. H. Ramsbottom, who has retired. The above changes are effective Jan. 1.

A banquet was given in honor of Mr. Kennedy and Mr. Ramsbottom, retiring officials, at the Duquesne club, Pittsburgh, Friday night.

♦ ♦ ♦

H. L. Austin, comptroller of the United States Steel Corp. since 1931, becomes assistant to the chairman of the finance committee, Jan. 1. The chairman is Edward R. Stettinius Jr., who on Jan. 1 succeeds W. J. Filbert. Mr. Austin started with a

J. E. Goble
Made vice president in charge of sales of National Tube Co.

W. F. McConnor
Promoted to general manager of sales of National Tube Co.

subsidiary of the Steel corporation in 1897.

A. W. Vogt, senior assistant comptroller of the Steel corporation, succeeds Mr. Austin as comptroller Jan. 1. Mr. Vogt has been with Corporation subsidiaries since 1894.

♦ ♦ ♦

Frederick H. Lewis has been appointed Pittsburgh district sales manager of Jones & Laughlin Steel Corp., Pittsburgh, succeeding Alfred C. Pollock, who has resigned to become vice president and secretary of the Dollar Savings bank, Pittsburgh.

Mr. Lewis joined Jones & Laughlin in 1918 as assistant manager of the order department, previous to which he was with the Midvale Steel & Ordnance Co.

Walter L. Thompson Jr. has been appointed assistant district sales manager at Pittsburgh, for Jones & Laughlin. He was first employed in

Frederick H. Lewis
Named Pittsburgh district sales manager of Jones & Laughlin Steel Corp.

the order department in 1915, and was transferred in 1919 to the Pittsburgh district sales office.

♦ ♦ ♦

Walter S. Tower, executive secretary, American Iron and Steel institute, New York, will deliver an address at the annual convention of the Institute of Scrap Iron and Steel at the Sherman hotel in Chicago, Jan. 23, it is announced by Benjamin Schwartz, executive secretary of the Scrap Iron institute.

♦ ♦ ♦

Thomas J. Hilliard has been appointed Pittsburgh district sales manager for Carnegie-Illinois Steel Corp. He succeeds David F. Austin, who was transferred recently to Chicago for the Carnegie-Illinois Steel Corp. Mr. Hilliard goes to Carnegie-Illinois

Thomas J. Hilliard
Appointed Pittsburgh district sales manager of Carnegie-Illinois Steel Corp.

from the executive vice presidency of the Standard Steel Spring Co., Coraopolis, Pa., a position which he held from 1933 to the present. For some years previous he was president of Waverly Oil Co. He is a graduate of Princeton university and was a captain in the United States air corps in the World war.

♦ ♦ ♦

Harry J. Morlang, formerly vice president of Oil Well Supply Co., Dallas, Tex., has been appointed vice president in charge of sales of oil country goods for the Oil Well Supply Co., with headquarters at Dallas.

♦ ♦ ♦

William J. McKee has been appointed assistant general manager of sales in charge of standard pipe sales, with headquarters at Pittsburgh, for National Tube Co. Mr. McKee was formerly manager of sales in the New York district office.

B. C. Moise, vice president, secretary and auditor, of National Tube, has been assigned additional executive duties.

E. W. Criswell has been elected secretary, succeeding Mr. Moise.

H. C. Cushwa has been elected auditor, succeeding Mr. Moise. Mr. Cushwa retains his present position as assistant secretary.

Chris Spring has been appointed assistant auditor, succeeding Mr. Cushwa.

♦ ♦ ♦

At the annual meeting of the board of directors of the Exhibitors Advisory Council Inc., recently held, the following officers were elected to serve in 1936: Vice president, E. J. Billings, Babcock & Wilcox Co., New York; secretary, C. E. Sullivan, Foxboro Co., Foxboro, Mass.; treasurer, R. H. DeMott, S. K. F. Industries Inc., Philadelphia.

Among directors who will preside over the 12 industrial and trade show groups are: Messrs. DeMott and Sullivan, S. A. Knisely, advertising and sales promotion manager, Republic Steel Corp., Youngstown, O.; F. C. Kerns, lubricating representative, Texas Co., New York; R. Leavenworth, general advertising manager, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; J. F. McNamara, sales manager, International Nickel Co., New York; C. F. Radley, publicity director, Oakite Products Inc., New York; J. C. Matchett, vice president, Illinois Engineering Co., Chicago; H. M. Shackelford, sales promotion manager, Johns-Manville Corp., New York, and L. W. Shugg, division manager, publicity department, General Electric Co., Schenectady, N. Y. N. O. Wynkopp, McGraw-Hill Publishing Co.,

Walter L. Thompson Jr.
New assistant Pittsburgh district sales manager of Jones & Laughlin Steel Corp.

New York, was elected president of the council and also a director.

♦ ♦ ♦

Prof. Warren K. Lewis, professor of chemical engineering, Massachusetts Institute of Technology, will be presented with the Perkin medal of the Society of Chemical Industry at a meeting, held jointly with the American Chemical Society, Jan. 10 at the Chemists' club, New York. The award has been made in recognition of his creative activities as the father of modern chemical engineering and his training of and inspiration to many of the present and potential leaders in the profession. He will present a paper entitled "Application of Physical Data to High Pressure Processes."

EDITORIAL

Forecast Improved Volume, Higher Prices for 1936

IN THE last issue of the old year it is appropriate to discuss the business outlook for the new year. During recent weeks many authorities have expressed their opinions as to what industry may expect in 1936. What is the consensus of their predictions?

One way to answer this question is to analyze the business forecasts compiled in *The Bulletin* of the National Association of Purchasing Agents. This organization usually devotes a large part of last issue of *The Bulletin* in each year to brief statements on the outlook for the new year by commentators in many lines of activity. In the issue just published forecasts by 40 authorities are presented. Among the authors are well known economists, trade association executives, editors of financial and business papers, bankers, purchasing agents, etc.

In studying the predictions of the 40 authors, one is impressed with the unanimity on two points: 1. Industrial activity in 1936 will be greater than in 1935. 2. Prices will be higher.

Predictions on Gain in Steel Output in 1936 Range from 10 to 50 Per Cent Over 1935

Several authorities are quite specific in their forecasts of business volume. Colonel Leonard P. Ayres declares that "the volume of industrial production in 1936, as measured by the index of the federal reserve board, will probably exceed that of 1935 by less than 12 per cent." Ralph B. Wilson, vice president, *Babson's Reports*, says, "From present indications we estimate a gain of from 10 to 12 per cent in the total physical volume of business in 1936 over 1935." Dr. Louis H. Bean, economic adviser, AAA, states that the expectation of a greater demand for farm production in 1936 is based on "our appraisal that industrial production in 1936 may average approximately 10 per cent higher than the level of industrial production during 1935."

Definite predictions as to the output of iron and steel in 1936 show considerable variation. Colonel Ayres believes production will be 10 to 20 per cent greater than in 1935. Mr. Wilson places the figure at 10 to 15 per cent greater. Alvan T. Simonds, president, Simonds Saw & Steel Co., sees ingot output up 50 per cent.

The forecasts on automobile output also vary considerably. Colonel Ayres thinks that the "output of passenger automobiles in this country may increase, but probably by less than 10 per cent." Mr. Wilson declares the gain will be about 12½ per cent. Mr. Simonds believes the output of low-priced cars will be up 10 per cent and of medium-priced cars up 75 per cent.

Predictions on building, on the whole, are encouraging. Colonel Ayres says, "It seems probable that the value of contracts for residences will increase by more than 50 per cent, and that of non-residence buildings by not over 10 per cent." Mr. Wilson's prediction is for an increase of about 65 per cent in total building and 80 per cent in residence construction. Mr. Simonds expects a rise of 100 per cent in residences.

Expect Trend Toward Higher Prices Generally, With Inconsistencies Among Individual Products

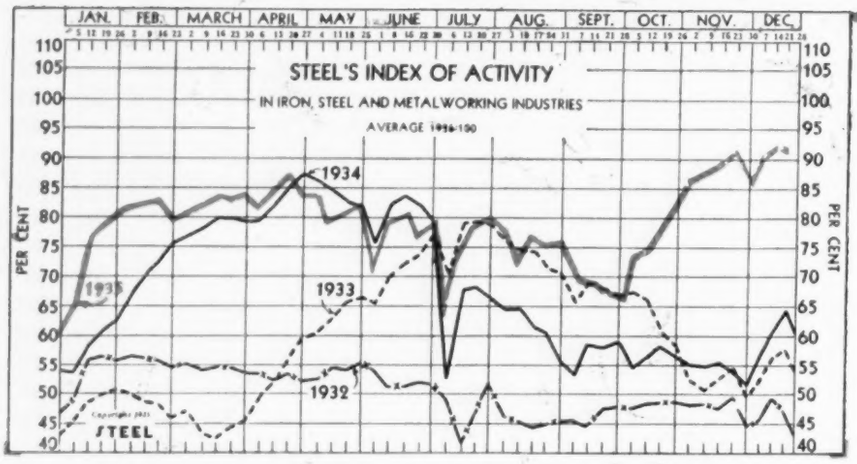
Many authorities hint at important interruptions to the trend of business in 1936. Dr. Lewis H. Haney says, "I look for business to open the year hesitantly and with some let-down." Dr. H. Parker Willis states, "While the prospects are for continuation of present better business conditions for a few weeks or months in the early part of 1936, obvious influences can be definitely perceived which may combine to check improvement and in some circumstances to cause very decided recession." Dr. Neil Carothers, Lehigh university, predicts that recovery will advance "slowly and rather erratically."

While agreement on generally stronger prices prevails, many commentators are cautious in their predictions on this subject. Dr. Haney says prices seem likely "to edge upwards gradually pending the development of more effective inflation." Fred Messner, Brookmire Corp. believes the main trend of commodities will be upward and that reactions should be temporary. W. W. MacMillen, director of purchases, National Malleable & Steel Castings Co., looks for an increase in scrap prices and in some finished steel lines. "General commodity prices will be pretty stable." H. N. McGill declares that, contrary to many predictions "our studies do not support broad independent price strength in commodity markets during the near-term period."

Summing up the forecasts, one finds an expectation of better business, punctuated with some hesitation and recession during the year. The general trend of prices will be upward, but individual prices may move inconsistently.

If the consensus of predictions is reasonably accurate, the obvious cue to industrial executives is to be cautious in order to guard against the unexpected, and to be alert to opportunities.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metalworking industries declined* 0.1 *points to* 91.7 *in the week ending Dec.* 21:

Week ending	1935	1934	1933	1932
Oct. 5	73.3	54.7	67.4	48.4
Oct. 12	74.9	56.4	66.0	48.7
Oct. 10	77.4	58.2	60.9	58.7
Oct. 26	82.4	56.3	58.0	48.3
Nov. 2	86.4	55.0	52.3	48.8
Nov. 9	88.4	54.9	50.7	47.7
Nov. 16	88.8	55.2	52.6	49.2
Nov. 23	90.9	54.4	55.4	44.5
Nov. 30	86.0	51.9	49.7	45.3
Dec. 7	91.7	56.8	52.6	46.6
Dec. 14	91.8†	60.6	56.0	49.3
Dec. 21	91.7*	64.4	58.0	46.9

†Revised. *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by Cram's Reports) and the steelworks operating rate (estimated by STEEL*). Average for* 1926 *equals* 100, *weighted as follows: Steel rate* 40, *and car loadings, power output and auto assemblies each* 20.

Let-down for Holidays More Pronounced Than Year Ago

WHILE the tone of business in the closing days of 1935 continues strong, there are indications that the extent and duration of the year-end, holiday let-down are somewhat more pronounced than they were a year ago.

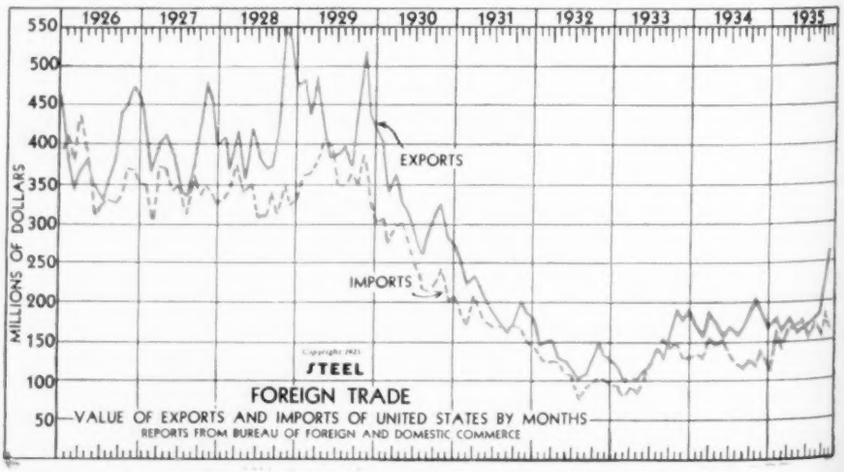
In December, 1934, STEEL'S index mounted sharply for four weeks, eased off moderately in the final week, and then shot upward steadily throughout January. This year, the index—although at a much higher level—has been inching up slowly during December. It came virtually to a standstill in the third week, and a recession undoubtedly will be recorded when figures for the fourth week are available. The week ending Jan. 4 also is likely to show curtailed activity.

The tendency toward a more pronounced let-down also is emphasized by fluctuations in the rate of steelmaking operations. In December and January a year ago the rate jumped steadily from 28 to 53 per cent—without a recession over the year end. This year the rate at the beginning of December was 57 per cent, and it has been receding ever since.

On the other hand, automobile output, which a year ago was languishing at around 35,000 units weekly, now is in excess of 100,000 cars weekly. While this column possibly has been placing undue stress upon the significance of the output of electric power, alert executives in the metalworking industries cannot afford to ignore the portent of the record-breaking performance of this barometer during the past six months. Power output has been rising steadily and in the week ending Dec. 21 it broke through the 2,000,000,000 kilowatt-hour level. Actual

Dollars (000 omitted)

	1935		1934	
	Exports	Imports	Exports	Imports
Jan.	176,223	166,993	169,531	128,536
Feb.	163,006	152,537	159,671	125,292
March	185,603	177,279	190,000	158,000
April	164,350	170,567	179,427	146,523
May	165,457	170,207	160,207	154,647
June	170,193	156,756	167,957	135,048
July	173,371	177,698	161,787	127,342
Aug.	172,194	169,030	171,965	119,516
Sept.	198,189	161,653	191,690	131,659
Oct.	221,215	189,240	203,622	137,859
Nov.	269,400	168,955	194,909	150,919
Dec.	.....	.....	170,676	132,252


1926 1927 1928 1929 1930 1931 1932 1933 1934 1935
MILLIONS OF DOLLARS
EXPORTS
IMPORTS
STEEL
FOREIGN TRADE
VALUE OF EXPORTS AND IMPORTS OF UNITED STATES BY MONTHS
REPORTS FROM BUREAU OF FOREIGN AND DOMESTIC COMMERCE

reported output was 2,002,005,000. While this fulfills our prediction made several months ago, the real significance lies in the fact that rehabilitation and expansion of generating and distributing facilities is overdue. Had it not been for the antagonism of the federal administration against public utilities—amounting almost to a fanatical desire to destroy them—the producers and distributors of electricity undoubtedly would have been building new plants, repairing old ones and otherwise engaging in needed improvement and expansion. However, the urgent need of improved facilities may force capital expenditures in spite of government competition and persecution.

This would mean business for the metalworking industries and particularly for the electrical equipment companies. But equally, if not more important, is the fact that the heavy power demand reflects in part the increased use of electrical operated mechanical devices such as radios, refrigerators, washing machines, air-conditioning apparatus, oil burners, stokers, fans, etc. The expanding use of these products means a greater market for ferrous and nonferrous materials. For these and other reasons the weekly record of power output has particular significance for the iron, steel and metalworking industries.

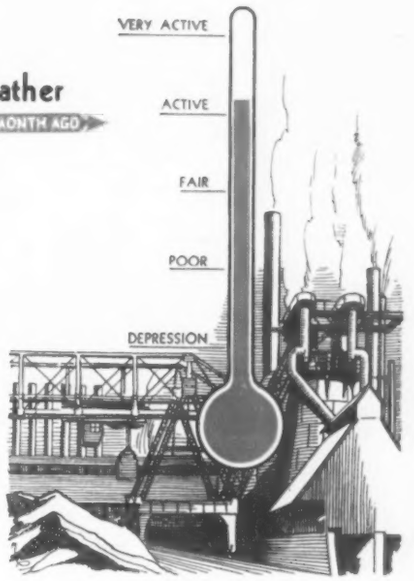
Car loadings still are declining seasonally, but they continue to be maintained at a level which is roughly 10 per cent above the corresonding loadings last year.

Where Business Stands

Monthly Averages, 1934—100

	Nov., 1935	Oct., 1935	Nov., 1934
Steel Ingot Output	149.3	143.4	76.2
Pig Iron Output	157.2	145.7	72.9
Freight Movement	107.3	121.6	99.3
Building Construction	189.8	218.6	100.6
Automobile Output	170.6	117.5	33.2
Wholesale Prices	.....	110.8	100.1

Industrial Weather



TREND:
Easier

The Barometer of Business

Industrial Indicators

	Nov., 1935	Oct., 1935	Nov., 1934
Pig iron output (Daily average, tons)	68,876	63,818	31,930
Machine Tool Index	93.8	102.9	44.2
Finished Steel Shipments (tons)	681,820	686,741	366,119
Ingot output (Daily average, tons)	121,279	116,535	61,947
Dodge Bldg., awards in 37 states (sq. ft.)	24,120,700	27,775,900	12,780,800
Automobile output	411,520	283,334	80,112
Coal output, tons	33,010,000	36,697,000	30,450,000
Business failures; number	927	1,097	922
Business failures; liabilities	$20,023,000	$22,243,000	$18,349,000
Cement product on, Bbls.	.....	7,510,000	5,779,000
Cotton consumption, bales	507,836	552,000	480,081
Car loadings (weekly average	635,889	720,481	588,307

Financial Indicators

	Nov., 1935	Oct., 1935	Nov., 1934
25 Industrial stocks	$197.03	$186.84	$139.35
25 Rail stocks	$29.48	$26.73	$28.15
40 Bonds	$81.96	$81.18	$80.22
Bank clearings (000 omitted)	.....	$20,483,390	$16,758,222
Commercial paper rate (N. Y., per cent)	¾	¾	1
*Commercial loans (000 omitted)	$8,152,000	$7,962,000	$7,705,000
Federal Reserve ratio, per cent	77.0	76.5	70.6
**Railroad earnings	$75,425,092	$57,359,339	$48,624,984
Stock sales, N. Y. stock exchange	.....	46,662,841	20,868,401
Bond sales, par value	$301,977,000	$275,608,200	$250,921,900

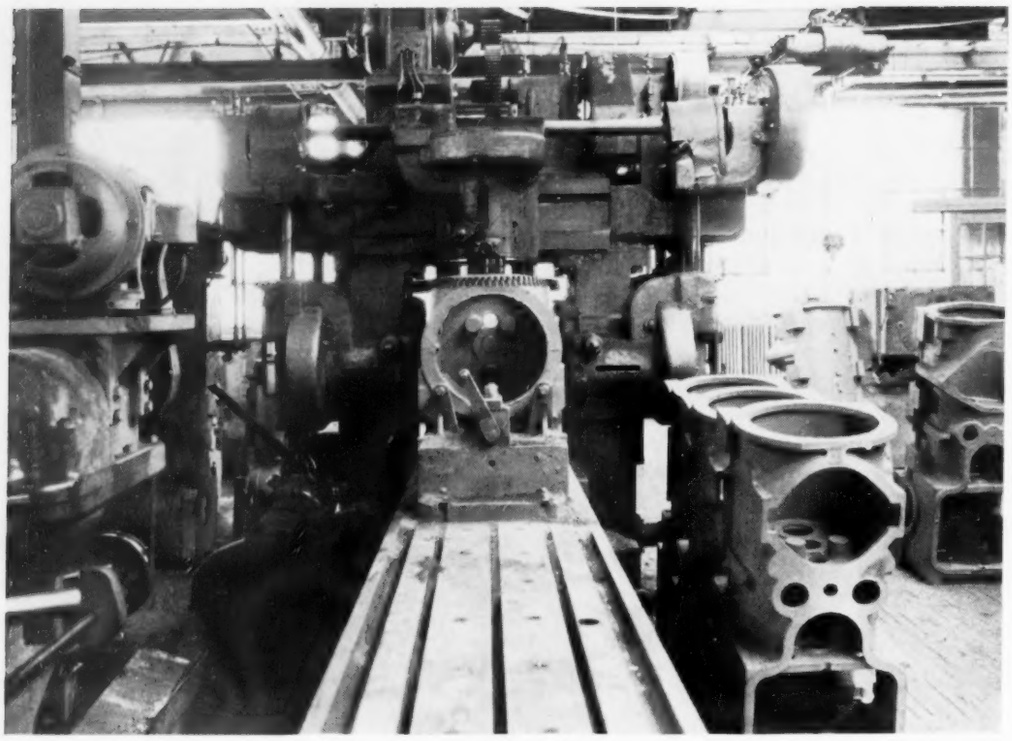
*Leading member banks Federal Reserve System.
**October, September and October respectively.

Foreign Trade

	Nov., 1935	Oct., 1935	Nov., 1934
Exports	$269,400,000	$221,215,000	$194,712,000
Imports	$168,955,000	$189,240,000	$150,919,000
Gold exports	$242,000	$76,000	$310,000
Gold imports	$210,810,000	$315,424,000	$121,199,000

Commodity Prices

	Nov., 1935	Oct., 1935	Nov., 1934	Mo. Av. 1913
STEEL's composite average of 25 iron and steel prices	$33.17	$32.84	$32.15	$26.32
Bradstreet's index	.....	$10.28	$9.29	100
Wheat, cash (bushel)	$1.09	$1.16	$1.13	92c
Corn, cash (bushel)	84c	$1.08	97c	51c
Petroleum, crude (Bbl.)	98c	98c	98c	$2.50



MASSIVE planer-type milling machines capable of working on three surfaces at one setting help to keep production costs at normal

MACHINE TOOL MAINTENANCE

How a Tractor Manufacturer Meets And Solves This Important Problem

MACHINE tool maintenance in any large manufacturing plant is a vital problem. Production lines may be laid out with the greatest care so that parts in process of production will proceed from start to finish without appreciable loss of time. However, if the various machine tools and the special tools used with them are not kept at a high degree of efficiency, production is bound to lag. Machine tool maintenance problems in various plants differ, due to local conditions, nature of the product and the like, but in general the term applies broadly to keeping production lines at highest possible efficiency.

At the plant of the Cleveland Tractor Co., Cleveland, the products are crawler-type tractors for agricultural, industrial and construction purposes. About 1500 machine tools are installed in the plant while the normal working force is 1000. Contrary to the general supposition, a tractor is not an agricultural implement to be made at as low a cost as possible. It falls in the class of automotive equipment and must be constructed with a high degree of skill wherein the production limits compare favorably with those found in any automobile manufacturing plant. In this article are outlined briefly a few of the major machine tool maintenance problems.

Machine tool maintenance is so closely connected with adequate production that a brief outline of what happens when the company decides to introduce a new model will be of interest. After the tractor has been designed and detailed by the engineering department and the designs approved by both the works manager and general manager, it becomes the duty of the methods and standards department to decide what equipment is necessary, including special tools.

In many cases the present machine tool equipment may prove adequate; in a number of instances, however, it is necessary to buy new tools, often so-called special purpose tools. In this case the machine tool is purchased complete with all the necessary tooling equipment wherein the maker has guaranteed the tool to produce a certain amount of work per hour. In this way, the maker can be held to his estimate.

Thus, the methods and standards department works out the tooling and equipment, and lays out the production route. Then there are of course a number of jigs and special tools to be designed or purchased. These tools are planned by the tool designing department, recommendations being submitted to the works manager and general manager. If the cost figures are satisfactory, an order is issued to make the tools. However, in some instances these special tools are purchased from outside sources; then it is necessary for the inspection department to decide what gages are necessary. Also, the time study department must work out time studies and set rates. Cost of raw materials is worked out by

BY FRED B. JACOBS

the planning and purchasing departments.

Thus, through close co-operation between the several departments, a good estimate is made of the cost of producing various units. However, after the production line is in operation, the real work of reducing production costs begins. It may happen that the parts in process of production are bottle-necked at a certain point. Of course, this slows up the entire production line. The time study department may be able to restore production through time studies to increase personal efficiency.

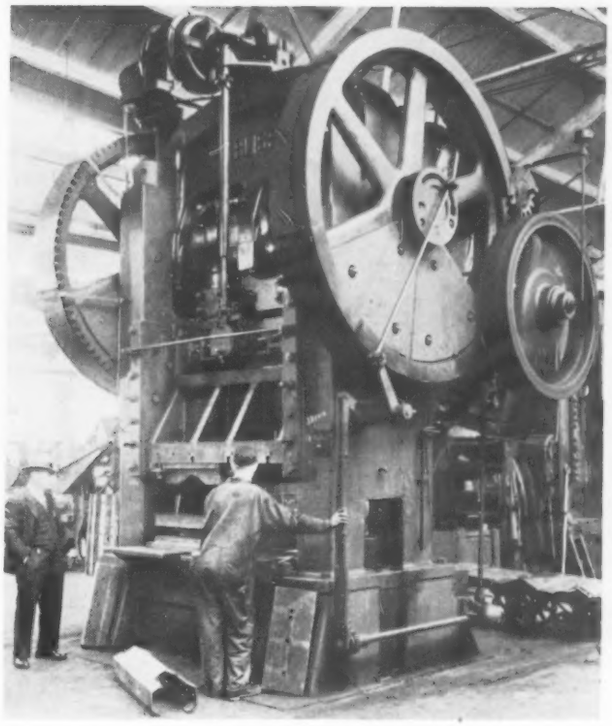
Two Operations Per Man

Time study may reveal that one man can look after two operations. For example, suppose one man machines a part in a turret lathe and this part is passed along to the next operator who puts it in a jig and drills and reams three holes. The turret lathe operator has considerable spare time on his hands since his machine is semiautomatic. Thus, he can perform the drilling and reaming operation in his spare time. The time study department finds that this man should take the finished part from his turret lathe and place it on the drill press platen. Then he chucks a new part in the turret lathe. While this machine is in operation he puts the part previously completed in the drill jig and drills and reams the holes.

It may be found that a milling operation is too slow, resulting in work piling ahead of this machine. In this case the methods and planning department may find that the machine is fitted with a special fixture which takes too much time to load and unload. The remedy is to provide a more adequate fixture. Again, it may happen that the machine itself is an old model and not up to present-day production standards. A recommendation is made to discard this machine and install a more modern tool in its place.

It may happen that a cylindrical grinding machine is slowing down production. In such an instance the trouble often can be overcome by using a freer cutting wheel, a higher wheel speed or work speed, a faster rate of work traverse or a combination of any of the above factors.

Perhaps a drilling operation is unduly slow. In this case multiple instead of single-spindle drilling is the remedy. In one instance in the production of tractor shoes, a special purpose drilling machine capable of drilling and reaming six holes simultaneously, operated by one man, is doing the work formerly done by three men.

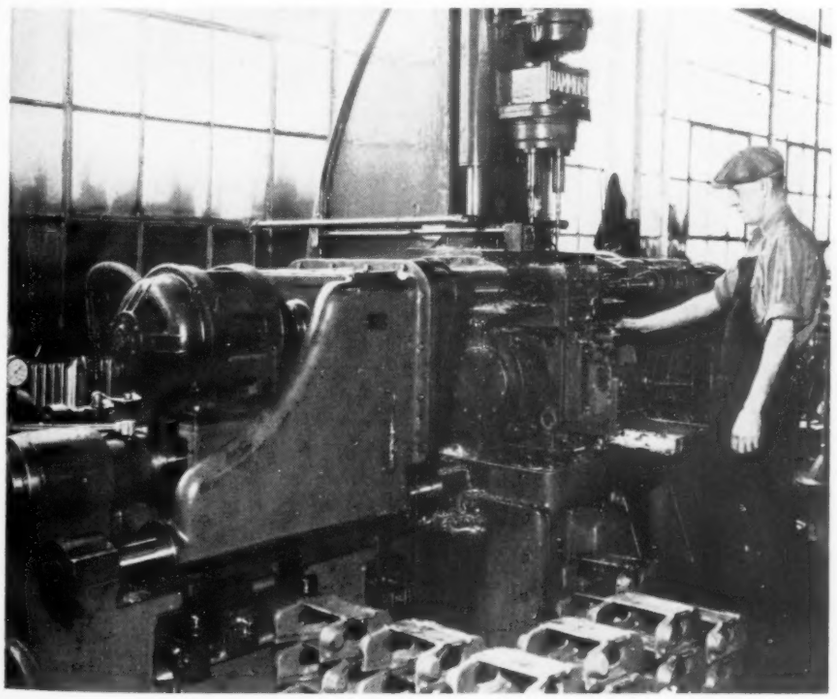


MASSIVE units such as this press represent a substantial initial cost but a saving is shown by virtue of expediting production

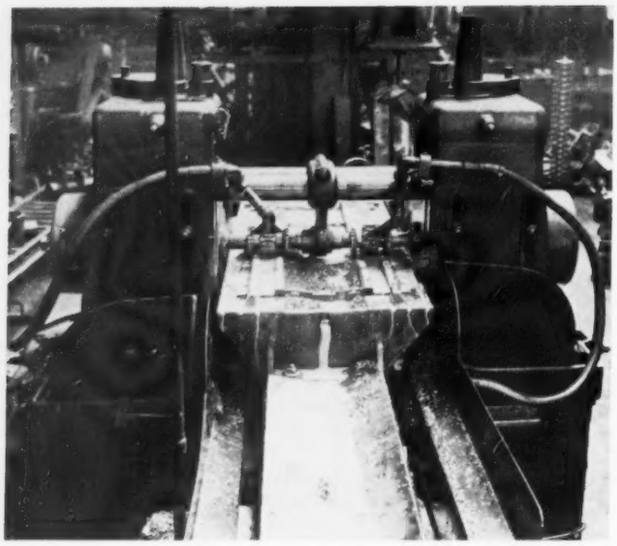
Saving Production Time

In another instance a cast iron hub 6 inches long, 5¼ inches diameter, 3¼ inches bore, was bored, faced and turned in a turret lathe involving two settings in the turret lathe, which was an expensive procedure. Now the hole is broached; then the work is put on a special expanding arbor and turned and faced in a special purpose lathe. The necessary new equipment was expensive, but it saves a substantial amount of production time.

From the foregoing it is shown that constant attention to production lines is necessary to assure adequate output, for a few minutes saved here and there virtually decide the difference between profit and loss. The ABC of laying out and adequately maintaining a production line is to reduce idle time. However, it



A SPECIAL machine drills and reams six holes simultaneously in tractor shoes—insuring accuracy and alignment



A DUPLEX milling saves valuable time as it produces twice the work per hour, compared with a single unit

is of little use to reduce production time on one machine a third or two thirds of the way down the line, if the reduction of time lets this machine stand idle. The correct method is to reduce the idle time and increase the productive time all along the line. This often is a difficult procedure and is worked out only through constant observation and study.

Deciding on Replacements

Constant operation, of course, will wear out the best of machine tools. When a machine begins to show signs of appreciable wear the foreman reports this fact to the estimating department. This department inspects the tool carefully and gets the total cost of overhauling to make the machine as good as new. Various factors must be given consideration, such as the amount of service the machine has given, its book value and the cost of a new machine to replace it.

If it is decided to repair the machine, repairs are done under the supervision of the toolroom. In peak times, when the plant is busy, this repair work is done outside the plant or by men brought into the plant from outside sources. For example, if the ways of a cylindrical grinding machine needed rescraping, the repairs might be done by a man supplied by the grinding machine manufacturer.

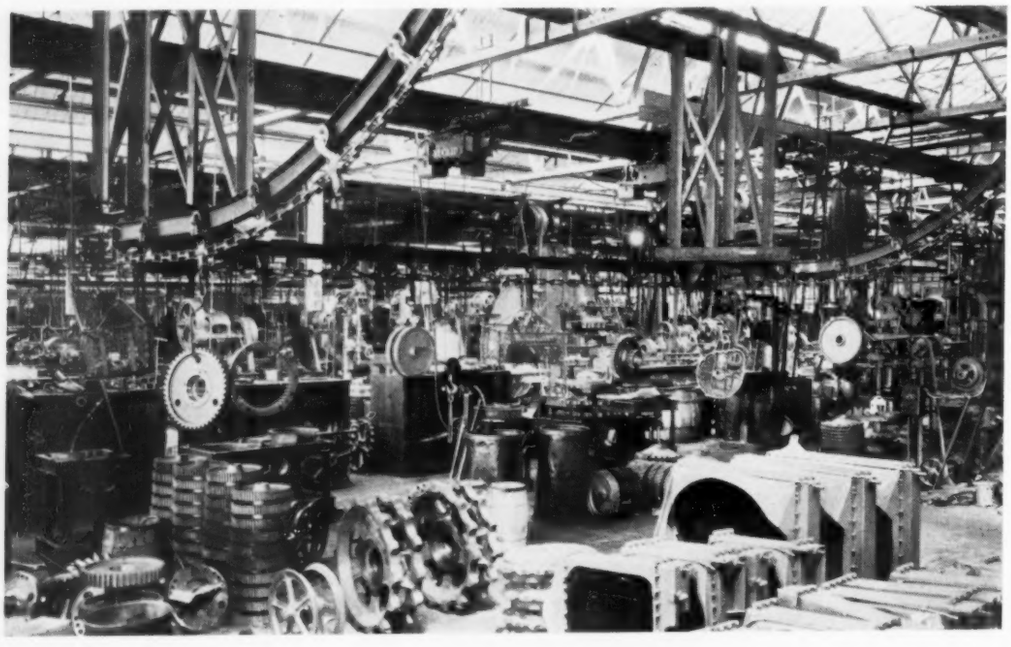
When it has been decided to replace old machine tools with new units or to purchase new tools for new operations, the opinions of the production line foreman are given due consideration. Then the methods and standards department and the purchasing department also are consulted. The works manager, however, has the final decision. The procedure must be given consideration from all angles, for it is of little use to buy an expensive tool just because it is expensive when a moderate priced machine would answer the purpose equally well. The builders of standard tools such as engine lathes, shapers, milling machines, boring mills, turret lathes and the like can furnish production figures which aid the methods and standards department and the other engineering officials in determining the value of a given tool in almost any production line.

However, while it is true that standard tools are used extensively, many of them are special units, or at least standard tools adapted to multiple operations, such as two and three-spindle milling machines.

As stated previously, worn machine tools often can be repaired. However, there also is the matter of so-called old tools. Such units may be taken out of production lines to make way for new and more efficient units. If a use for such a machine can be found, all well and good; but in the majority of such cases the machines are sold for scrap. This is a logical procedure inasmuch as the average machine tool, ready for the scrap heap, has already been written off the company's books.

Furnace Trays of Nickel

Because pure nickel resists oxidation at temperatures above 1800 degrees Fahr. better than any other material previously used, the Ford Motor Co., Dearborn, Mich., uses trays made of this material to hold cutting tools while passing through heat treating furnaces at 2100 degrees Fahr.



MOST parts entering into a tractor are precision units which must be machined with a high degree of accuracy

Eliminating the Blistering Of Enamels on Cast Iron

BY H. D. MCLAREN
Ferro Enameling Co. of Canada Ltd.

AT ONE time or another, all porcelain enamelers undoubtedly have encountered trouble with the blistering of enamel on cast iron, and are familiar with the fact that the blisters are caused by the evolution of gases. Assuming that the enamel is of good quality and free from contamination, the gases do not originate in the enamel itself, but come from the iron upon which the enamel is applied.

The author thinks he is on safe ground in stating that, generally speaking, all cast iron enamels blister during the firing process. Gases given off early in the firing process usually do not cause trouble; gases evolved during fusion, or after the enamel is fused, produce blisters in the coating. If firing is continued long enough, and the enamel is sufficiently fluid to permit the gases to escape, no blisters appear in the finished coat. This statement, of course, is subject to the condition that the iron does not continue to give off gases throughout the firing period.

Trouble from Fast Come-Back

A blistering condition may be caused by a furnace having too rapid a come-back. In other words, the furnace causes the enamel to fuse too soon or before the gases have had a chance to escape. This condition was found to be the cause of blistering which occurred persistently in the enameling of small pieces in an experimental laboratory furnace. If the pieces were left in the furnace for an unusually long period, blistering disappeared, but then the enamel was over-fired, as was indicated by a loss of opacity.

When the pieces were placed in the furnace, the temperature dropped only 30 or 40 degrees Fahr. and the enamel fused too quickly. If the temperature was lowered about 100 degrees below the peak burning temperature before the pieces were placed in the furnace, they could then be burned successfully without blisters appearing in the finished coat. This, however, required an unusually long firing period and resulted in loss of time. Finally, the trouble was overcome by putting a heavier weight of burning bars in the furnace, which slowed down the come-back and also raised the pieces farther up from the bottom of the burning chamber. With this change in the furnace, the pieces could be fired in the normal time.

The gases causing blistering are carbon dioxide and carbon monoxide which are evolved from the surface of the iron. Carbon exists in the iron in two distinct forms — as free, graphitic carbon, usually as plates or flakes, and as combined carbon (iron carbide Fe_3C or cementite). When the castings are poured into the molds, a hard skin forms on the surface of the castings known as the microchill, and this hard skin contains a higher percentage of combined carbon than the body of the casting. It has been shown that the graphite flakes do not readily evolve gas at enameling temperature, and are not likely to cause blistering trouble. The combined carbon, however, breaks down and produces free carbon in a very finely divided state, which is readily oxidized, resulting in the evolution of the carbon dioxide and monoxide gases.

One way to cure blistering trouble is to anneal the castings before they are enameled. This operation breaks down the combined carbon and causes the evolution of gases before the enamel is applied. Following this anneal, the castings are sandblasted to remove the scale and are enameled in the usual way. Another remedy is to remove the microchill from the castings by means of grinding or deep sandblasting.

Both these remedies, however, are expensive. It is important, therefore, that the foundry produce castings of the proper analysis and structure. First, it is most important that the iron be sound. Spongy castings cannot be enameled without blistering, even after the microchill has been removed.

The analysis of the iron should be controlled so that the castings have either a comparatively soft microchill which can be readily removed with normal sandblasting, or the combined carbon stabilized so that it does not break down readily.

In enameling iron the total carbon runs fairly constant, and usually lies between the limits 3.25 and 3.60 per cent. Of this, in good enameling iron, the amount of combined carbon is usually between 0.25 and 0.55 per cent. To produce an iron with a removable microchill, the combined carbon should be kept as low as possible. This is accomplished by having a high silicon content, say about 3.0 per cent. The influence of silicon is toward the production of graphitic carbon by increasing the tendency toward the stable form. Manganese hardens the iron and acts as a stabilizer in preventing or retarding the break-down of combined carbon in the enameling process. Therefore, in aiming to produce iron with a removable microchill, manganese should be kept toward the low end of the range in which it is used in enameling iron, about 0.45 per cent.

Effects of Analysis

Sulphur, when it exists in the iron as iron sulphide, which is soluble in the iron, has a tendency to prevent the formation of graphite. However, if sufficient manganese is present, the sulphur exists as manganese sulphide which, being insoluble in the molten iron, has little or no effect on its structure or properties. Since sulphur in enameling iron seldom exists in excess of 0.10 per cent, we do not need to consider it in connection with blistering.

Phosphorus imparts fluidity to the iron and promotes the formation of graphitic carbon, probably due to its effect in lengthening the solidification period. Therefore, in the type of iron we are considering, phosphorous should be high — close to 0.95 per cent.

Since avoidance of superheating favors a soft iron, the iron should be poured at as low a temperature as possible.

We can now write the typical analysis of an iron which should have a readily removable microchill as follows:

	Per cent
Total carbon	3.25
Graphitic carbon	3.00
Combined carbon	0.25
Silicon	3.00
Manganese	0.45
Phosphorus	0.90
Sulphur (max.)	0.10

By reversing the above arguments, we can state that to produce an iron

(*Please turn to Page 40*)

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THE accompanying article, reproduced from the July issue of THE ENAMELIST, *constitutes a paper presented before the ceramic division of the Canadian Ceramic society in Hamilton, Ont., Feb. 26. The author, H. D. McLaren, is chemical engineer, Ferro Enameling Co. of Canada Ltd., Ottawa, Canada.*

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Surface Treatment

How To Prepare Surfaces To Receive Lacquers, Enamels

A PROMINENT paint manufacturer uses the slogan "Save the surface and you save all." A modification of this slogan could well be observed by all consumers of finishing materials—"Clean the surface or lose all."

A large percentage of the failures of finishes in the field can be traced directly to inadequate surface preparation prior to the application of the finishing material. The proper preparation of a surface to receive a finish is as important as the application of the finish itself, perhaps even more important, since even the best of finishing materials cannot perform its duties of protection if it will not adhere to the surface to which it is applied.

Merits of Sandblasting

It is a proved fact that enamels and lacquers will adhere best to slightly roughened surfaces such as produced by light sandblasting. Unfortunately, many instances occur in industry which prevent the use of this method either for economic reasons or because the material to be finished is not rugged enough to withstand the treatment without warping. However, the range in the degree of surface roughening and cleaning which can be obtained by this process is tremendous, varying from a fine grain, produced by using fine steel grit, to a "hammered brass" effect, obtained by using steel balls. This latter effect is an appearance effect widely used in ornamental work.

There are several processes of chemical surface treatment, two of which deserve special mention. They are phosphate processing and chromate processing. In the phosphate process steel articles to be finished are immersed in a solution consisting essentially of phosphoric acid, which produces a gray crystalline finish, highly corrosion resistant in itself. It forms an excellent surface for lacquers and other organic finishes and the final product will stand considerable weathering.

This process must be controlled or it will produce a coarse grained finish which is not desirable and the phosphated surface should be lightly sandpapered just prior to the application of the lacquer or enamel coating, because upon exposure to the air and handling, a dark film, to which lacquers will not adhere satisfactorily, is formed.

The chromate process is similar to the phosphate process as far as method of application goes but it is somewhat simpler in that it is easier to control and can also be applied by spraying. The solution, which consists essentially of dichromates, produces a chemically passive surface on the steel part, which is resistant to corrosion. Both of these chemical surface treatments have their individual merits and it is up to the consumer to decide which one suits his particular requirements, after he has seen them both in operation and compared the surfaces produced by each. Both processes produce surfaces which are excellent bases for lacquer, enamel and other finishes.

Other Methods of Preparation

It goes almost without saying that all traces of oil, grease, rust or loose scale must be removed before the application of any finish. Other methods of cleaning surfaces to take a finish include sandpapering, acid dipping and various electrochemical cleaning methods. Where corrosion resistance is a factor, surfaces sometimes are zinc plated, sherardized, or even tin plated before applying an organic finish, but these methods are rapidly losing favor because of their expense and because of the excellent results obtained from the use of the chemical treatments described above, which are less expensive.

Regardless of the method used, surface preparation should be controlled by rigid specification, and standards kept high by vigilant inspectors.

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Sputtering Process Gives Thin Film of Metal

NONCONDUCTORS of electricity can be coated with a film of metal of molecular thickness by means of a process known as "sputtering." The process is carried out in a vacuum, with the object to be coated placed between electrodes of the metal to be deposited and a high frequency current made to give a brush discharge.

Molecules of metal are deposited on the object between the electrodes in the form of an almost transparent film of metal. This film serves as a base for electroplating in the orthodox manner and a heavy plate can be built up. This process is used to make the master die for phonograph records and has been found to produce dies much sharper in detail than those obtained from the old graphite process.

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Rubber Coatings Produced By Electrolytic Method

AN INTERESTING process, not altogether new, is one by which rubber can be deposited on metal surfaces electrolytically. To line metal tanks, a solution of latex rubber is placed in the tank to be lined; an electrode is then introduced into the tank and upon application of an electric potential, rubber is deposited on the walls of the tank.

Small articles also can be coated with rubber by using a procedure similar to that used in electroplating metals.

t and Finishing

Art Metal Finish Is Used Without Undercoating

A new finish with ready ability to obliterate small surface imperfections in the metal, thus permitting the use of cheaper metals without the necessity for any undercoating has been developed by the Sherwin-Williams Co., Cleveland. Known under the name Kem Art Metal finish, it is available in any desired color. The color chart shows 16 of these colors, chosen for their adaptability to stylistic treatment of all sorts of metal articles. The finish is easily sprayed, applied full body with a full wet coat. It should be baked for a minimum of one hour at 220 degrees Fahr. Increasing the baking time increases the toughness of the finish. The darker shades are highly resistant to heat, and are adapted to use on furnaces, boilers, heaters, lamps and other units. Variegated effects in unlimited variety may be had with the new finish.

The new finish now is being used on small machine tools, novelties, toys, instruments, hardware, vanity cases, metal partitions, clocks, smoking stands and many other metal products. It may be applied to steel, cast iron, galvanized iron and steel, terne plate, chromium plate, aluminum, etc. With a special filler to prevent blistering, it also may be applied to wood.

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Announces New Bright Zinc Plating Process

A bright zinc plating method known as the Mazic process has been developed by the Hanson-Van Winkle-Munning Co., Matawan, N. J. It permits heavy deposits from a cyanide solution and is said to give satisfactory results in still tank, semiautomatic and full automatic plating systems. The plate is truly bright and is said to compare favorably with the best cadmium finishes. Solutions are said to be easy to maintain and the high cathode current density permissible in the Mazic solution makes this a high speed plating bath. Tanks used in this process should be of unlined steel.

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Progress Made in Coating Steel with Aluminum

Plating aluminum from aqueous solutions so far is commercially impossible, says Dr. C. B. F. Young, United States Research Corp., 40-35 Twenty-first street, Long Island City, N. Y. This condition seems, however, to have been overcome to some extent recently as a result of research work. The steel articles are dipped in molten aluminum and thus covered with a thin layer of the latter metal. In this operation care must be taken to have a reducing atmosphere around the steel articles during the coating process.

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Paints Penetrate Rust And Resist Corrosion

A new coating which is said to penetrate rust and to seal and protect rusted surfaces permanently has been developed by Heil & Co., corrosion engineers, Cleveland. It may be used alone as a coating, or as a primer, or as a paint vehicle. Known as Oxid-On, it is recommended for use on structural steel, tanks, mechanical equipment, tank cars, wire screens, containers, etc. It also is recommended for use on concrete and wood.

The company also recently developed a new paint known as Alkalon, which is said to form a tough, elastic film to resist abrasion, bending and temperature and to resist severe attacks of acids, alkalis, gases, brine, moisture, alcohol, oil and others. It is designed for use in chemical plants, plating establishments, water storage units, and on metal cleaning and other equipment.

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Develops New Synthetics And Novelty Enamels

Color chips showing four of its new novelty finishes, known as Brevokrak, Kristokrak, Sprayed Izarine and Veiling Lacquer, have been prepared by the Zapon-Brevolite Lacquer Co., North Chicago, Ill. The Izarine finish resembles cloth tightly stretched—over metal. It is produced by spraying cotton or rayon fiber with a modified air gun over a film of synthetic lacquer enamel before it has had time to dry. It is suitable to provide a display background for racks, cabinets, etc.

The company has developed a new air dry, spray, synthetic enamel which takes a reduction of two to one with thinner for spray application. It air dries dust free in approximately five minutes, is tack free in 30 minutes and many be packed after drying at room temperature for 16 hours. It has developed a new spray bake enamel which is reduced two to one with thinner for spray application and baked for one hour at 225 degrees Fahr.

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Chlorinated Rubber Base For Spraying Paints

A special, low viscosity type of its chlorinated rubber base known as Tornesit, has been developed by the Hercules Powder Co., Wilmington, Del. It can be sprayed easily and a number of paint and varnish manufacturers now are including it in their acid and alkali resisting paints. The product is manufactured in the company's new Tornesit plant at Parlin, N. J.

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Overcoming Coating "Flow"

Users of heavy coatings of asphalt for underground installation frequently have trouble because the finish "flows" or sags. This can be prevented by wrapping muslin cloth around the article being finished, after each coat, working it well into the asphalt while it is still warm. In this manner coatings up to ½-inch in thickness can be built up which will cause little trouble by "flowing". If the muslin is applied to a cold coating of asphalt, it should be gone over with an ordinary electric iron until it has been well worked into the coating.

METHODS AND MATERIALS

Development of New Alloy Extends Field for Permanent Magnets

NEW fields of application for permanent magnets, says General Electric Co., Schenectady, N. Y., are opened as a result of the development of its new alloy known as Alnico, said to be much more powerful than the usual permanent magnet alloys. Small motors and various control devices hitherto operated by electromagnets, says the company, now can use permanent magnet fields, at a considerable saving in cost and with greater simplicity of construction. The new magnets already have been applied by this company in blow-outs for relays, holding-in magnets of large switches, latching and special relays and in different control devices. Alnico magnets, it is stated, lift about 60 times their own weight when designed for that purpose.

The new alloy is usually cast and is finished to shape by grinding. The Simonds Saw & Steel Co., Lockport, N. Y., has been licensed by the General Electric Co., to manufacture and sell magnets of the new alloy.

The coercive force of Alnico is said to be higher and the residual induction lower for Alnico than for other magnetic materials. The maximum available energy is higher for Alnico and occurs at a lower flux density and a higher demagnetizing force. Alnico magnets, therefore, may be of smaller volume but generally should be designed with greater cross sectional area and shorter length to maintain a given magnetic field in an external air gap.

The new magnets are said to be less subject to demagnetization by stray fields. Tests on such bar magnets resulted in a decrease in total flux of less than 1 per cent after being subjected for one minute to an alternating field of 100 ampere turns per inch, and a decrease of approximately 10 per cent after being subjected to an alternating field of 500 ampere turns per inch. No further decrease was observed when the alternating field was maintained constant for one-half hour.

Alnico magnets are said to be less subject to demagnetization by high temperatures and less subject to demagnetization by mechanical vibration. Vibration tests resulted in a decrease of less than 1 per cent in total flux after severe vibration at 120 cycles per second for one-half hour. Alnico magnets require a considerably stronger magnetizing force to magnetize them completely than do other magnet materials. A magnetizing force of at least 2000 oersteds (4040 ampere turns per inch) should be applied. The new magnet alloy has a relatively low specific gravity, 6.9, is non-corrosive and is brittle. It is cast in the proper design, and finished by grinding. Any necessary holes should be cored in the casting. Soft steel inserts may be cast in for fastening.

Beer Transportation Deluxe

With this streamline trailer-type refrigerator truck built by the Inland Trailer Mfg. Co., Stockton, Calif., for long distance deliveries up and down the Pacific Coast, transportation of beer strikes a modern note. Constructed throughout of paintgrip steel sheets manufactured by the American Rolling Mill Co., Middletown, O., and finished attractively in red and chromium, the truck has a capacity of 600 cases or 15 tons. The body is 26 feet long, 8 feet wide and 6 feet 6 inches high inside. Because of less deadweight, savings are effected in transportation costs. An additional feature is that the bottles are kept clean and cold from brewer to dealer

s s s

Cleansing Solvents for Removing Castor Oil Paste

A paste made of castor oil and lead, recommended for use as a lubricant in the cold forming of monel metal and nickel, can be re-

moved by a number of solvents. Carbon tetrachloride, being noninflammable, is to be preferred. Benzene, gasoline, and alcohol produce satisfactory results. Cold soap and caustic solutions are not entirely satisfactory but can be used as an alternative, if necessary, when they are used hot.

s s s

Cylinder Is Moving Part In New Shock Absorber

A new type shock absorber, developed in Germany and shown in the accompanying illustration, has been placed in production by the Gabriel co., Cleveland. Known as the Gabriel-Walex, the usual practice has been reversed in the design of this new unit in that the piston is stationary while the cylinder becomes the moving part. Piston and cylinder are assembled in the form of a cartridge which fits into the shock absorber housing. The action is hydraulic, with the oil reservoir located in the housing.

The cylinder is machined from S. A. E. 1112 screw machine stock, the crank-shaft is drop forged from S. A. E. 1025 steel and the five springs in each unit are of S. A. E. 1360 steel wire. The piston is a zinc alloy die casting and the housing is a nickel iron casting. Balls in the intake and outlet ball checks are of high carbon, chromium-nickel steel. Copper gaskets are used to seal the piston into the housing. The piston is provided with a steel adjustment plug which seats against a solid copper gasket. The end of the crankshaft is provided with a brass thrust washer and is fitted with an oil-resisting, molded, rubber packing.

s s s

Cool Ground Coat Enamel

A recent investigation of the physical factors affecting the draining qualities of ground coat enamels in porcelain enameling indicates that the most desirable temperatures for dipping would be 65 to 75 degrees Fahr. This temperature can be maintained in the summer either by water cooling the dip tanks or by placing refrigerating coils in the tanks.

Research on Properties of Pure Iron Is Recommended

SCIENTIFIC research to determine the properties of pure iron should be undertaken by industry, it is declared in a monograph just issued by the iron alloys committee of the Engineering Foundation, 29 West Thirty-ninth street, New York, which is engaged in a critical review of the world's knowledge of ferrous metals. This avenue of investigation might lead to results which would exercise a marked influence upon the manufacture of iron and steel, it is held.

Chemically pure iron has never been prepared in usable quantities, though man has utilized the metal for thousands of years, it is pointed out by the investigators, Dr. H. E. Cleaves, associate chemist, and Dr. J. G. Thompson, senior metallurgist, national bureau of standards, Washington.

Pure Iron Is Different

The removal of apparently insignificant amounts of impurities may alter the properties of common metals to such an extent that the pure metal resembles a new rather than an improved product, it has been shown by recent research. Thus pure iron may yet be disclosed as something quite different from the metal which has served civilization for centuries.

The federal scientists indicate that if enough chemically pure iron were obtained to reveal its fundamental properties, it might be possible to effect appreciable economies in the American steel and iron industry, which last year produced approximately three quarters of a billion dollars worth of alloy steels.

Researches of Prof. Harold G. Urey, Columbia university, New York, showed how inadequate was our knowlede of the common substance water, Dr. Alfred D. Flinn, director of the Foundation, said. A study of iron may develop results as startling as the discovery of heavy water, and with far reaching consequences to industry.

The extraordinary magnetic permeabilities obtained in recent years on a few samples of iron are the result, at least in part, of increased purification of the specimens, according to the monograph.

Need for reliable fundamental data for iron has developed as a result of the demand for new and improved properties in plain and alloy steels, to meet requirements of constantly increasing severity in metallurgical and engineering service, the study continues. Alloys to meet these requirements have been developed largely by 'cut and try' methods.

At least 12 metallic elements, aluminum, chromium, cobalt, copper, manganese, molybdenum, nickel, silicon, titanium, tungsten, vanadium, and zirconium have been added singly or in combination to iron which already contained more or less carbon, silicon, manganese, sulphur, phosphorus, and perhaps other constituents, in the hope that the resulting heterogeneous mixture would have the desired property or combination of properties.

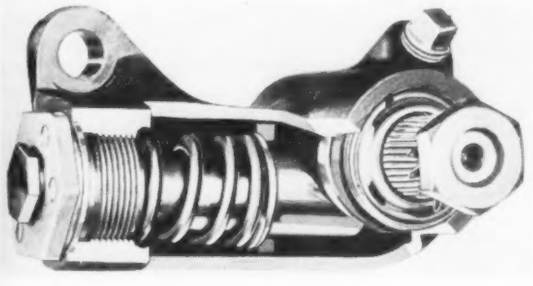
Better Starting Point

If accurate data were available in regard to the fundamental properties of iron itself and the effect of added elements on these fundamental properties, it should be possible, at least to some extent, to substitute calculation for hit-or-miss experimentation in the determination of properties of new alloy combinations or in the determination of the optimum benefit which can be obtained through addition of one or a combination of alloying elements. Certainly the starting point for any such exact knowledge is the determination of the fundamental properties of pure iron.

The best available approximation of the properties of pure iron is supplied by the purest irons on record, but these are the properties of high-purity iron, not of pure iron.

In this age of iron and steel, iron in one form or another is a familiar essential of our everyday life. It has been estimated recently that the amount of steel now in use throughout the world is about 1200 million tons, of which 700 million tons is in use in the United States.

In view of the wide use of ferrous materials, it would seem that the fundamental properties of iron, on



Cut-away view of new shock absorber in which the cylinder is the moving part. The view shows the position of the piston and cylinder

which the properties of all commercial irons and steels are based, would have been accurately determined long ago, but such is not the case. Some of the atomic properties of iron can be defined with certainty. However, even a casual survey of existing literature shows that the fundamental technologic properties of iron—mechanical, thermal, electric, and magnetic—cannot be stated with the precision which might be expected for the properties of such a familiar and widely used metal.

The fundamental properties of iron could be accurately determined from metal which contained no trace of any other element, but such iron has not yet been prepared, at least in usable quantities. Consequently its properties have not been determined directly.

The effect of the presence of very small amounts of impurities in metals has received increasing attention from metallurgists during the past 15 or 20 years. Metals usually are produced from complex ores which contain a variety of constituents both metallic and nonmetallic. The separation of a single metal from such a heterogeneous mass is a difficult problem, particularly from the standpoint of economic operation and quantity production.

Pure Iron Did Not Rust

It has long been known that certain properties of certain metals, for example, the ductility and electric conductivity of copper or the ductility of gold, were appreciably affected by the presence of a few hundredths of 1 per cent, or even by smaller amounts of certain impurities. Such cases, however, were regarded as exceptions, and in general any common metal which contained 1 per cent or less of total impurities was considered to be satisfactorily pure.

It is only in recent years that the production of zinc, aluminum, and lead in states of purity not previously obtainable has demonstrated that the elimination of apparently insignificant amounts of impurities may alter the properties of common metals to such an extent that the pure metal appears to be a new product rather than an improved one. The production of aluminum foil, and the successful development of zinc and zinc-base alloys for die casting, resulted from the changed properties exhibited by these purified metals.

The purest specimens of iron on record are credited to the scientists B. Lambert and J. C. Thompson, and G. P. Baxter and C. R. Hoover. By purification in a hydrogen flame Lambert and Thompson produced an iron that did not rust in pure water and oxygen, even after long exposure.

Baxter and Hoover used similar methods while studying the atomic weight of iron. Neither of the samples was analyzed by modern precision methods to detect traces of other elements. However, the scientists' description of their precautions against contamination, and the results they obtained won them recognition as the producers of what probably was the most nearly pure iron that ever has been prepared.

The monograph on iron is the sixth in the Engineering Foundation's series on alloys of iron. The first part of the book contains a critical review of the existing methods for the laboratory and commercial production of electrolytic iron, and a summary of the production of carbonyl iron, high-purity iron for special purposes such as atomic weight determinations, and commercial ingot and sponge iron. The second part of the book is devoted to a summary of published and unpublished data on iron's structure and properties.

For the benefit of practical metallurgists, Cleaves and Thompson discuss in detail the mechanical properties of iron, its heat treatment and aging. Corrosion and the effect of small amounts of impurities and alloying elements are treated also. The physical and chemical constants of the metal, its crystal structure, and the electrical and magnetic properties are enumerated for the benefit of chemists.

This monograph, titled "The Metal Iron," has been published in book form by McGraw-Hill Book Co. Inc., New York. It is bound in cloth; has 574 pages, 6 x 9 inches; and contains 95 tables and 113 illustrations. Copies are supplied by STEEL, Cleveland, for $6.00 plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

Proposes Uniform Test Procedure for Qualification of Welding Operators

IN THE development of fusion welding applications, progress has been made only by offering to the user definite assurance of the integrity of the welds. The most positive determination for this, of course, is the nondestructive exploration or test of the welded joint, but where that form of test does not appear to be warranted, the plan of qualifying the welding operator by tests of welds made by him is regarded by common consent as the most effective safeguard for the quality of welds.

The American Welding society has appointed a committee to correlate the requirements of existing codes relating to tests of welding operators. It is now well established that a welding operator normally will be inclined to perform welding of a quality as good as his training and ability permit for any particular process and type of filler metal. One of the difficulties most commonly encountered in establishing suitable qualification tests for operators is the fact that all such tests of operators are to a greater or lesser extent tests of the welding process as well.

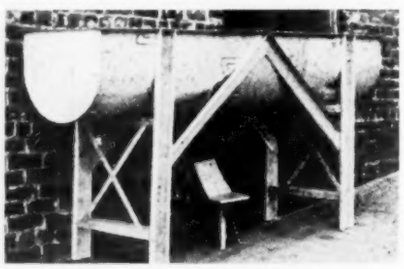
Will Start With Mild Steel

Therefore, it has seemed advisable to divide the code into two parts as follows: Part I—Qualification of the welding process and procedure for any group of materials and conditions; and Part II—Testing of the welding operator to determine his ability to apply properly the qualified process and procedure.

The committee is now engaged in the important and difficult task of providing under Part I for adequate methods of qualifying the various fusion welding processes and procedures, but at this stage of its work the rules will be limited to the welding of ferrous materials principally the nonalloy steels that have a carbon content not exceeding 0.35 per cent.

Effort has been made to provide

Steel for Cleanliness



MILK CANS ARE WASHED in vats of the type illustrated, manufactured by L. H. Overly, sheet metal contractor, Maryville, Tenn., from 24-gage galvanized sheets supplied by American Rolling Mill Co., Middletown, O. The chassis is of 20-gage sheets. The cans first are immersed in a chloride solution, then in hot water and finally in cold water; hence the tank has three compartments. In this service the vats have long life. Beneath the vat is a milking stool also made by Mr. Overly out of galvanized sheet

tests that will be sufficiently critical to determine the ability of any welding process and procedure to meet adequately the requirements of any code or welding specification that may be involved. It is the intent of these rules to provide that the tests covered by Part I shall constitute merely an initial qualification of the process and will not require repetition if the conditions involved are not changed.

Tests Are Inexpensive

With the qualification of the process established as provided for in Part I, it will be the intent of these rules that welding operators who are to operate thereunder need only submit to a very brief and inexpensive set of check tests, the purpose of which is to determine their ability to apply the established process satisfactorily. Great pains have been taken to remove from this phase of the qualification procedure any tests that may be considered tests of the process rather than tests of the operator.

The advantage of this plan in saving of both time and expense can be appreciated readily. The result will be more adequate treatment in Part I of the welding process in general, and at the same time, brief, inexpensive yet decisive check tests of the welding operators to determine their ability to apply the process in question. In the near future, the committee expects to submit the proposed procedure as a tentative set of rules for publication, whereupon general criticisms will be invited from all those interested.

Yield Strength of Casing Increased by Compression

A. O. Smith Corp., Milwaukee, now is offering to the oil industry its High-Yield casing. Compression yield strength, more than any other physical property, says the company, influences the usefulness of casing pipe. By a radically new process, the company states, actual compression of the pipe raises the compression yield point of the steel in the circumferential direction. As a result, the use of lighter weight casing for specified depth is permitted.

The procedure is first to manufacture casing pipe with a larger circumference than the desired finished circumference, with proportionately thinner walls, and then compress to the desired diameter, with an accompanying increase in the wall thickness. The compression is accomplished by the company through the use of a powerful press equipped with special dies. A booklet, issued by the company, describes the process in detail and sets forth the results obtained by its use.

WELDING, et cetera . . .

BY ROBERT E. KINKEAD

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

Difficult and Dangerous

OXYGEN and carbon ordinarily are considered impurities in steel which is to be welded or which is in process of being welded; yet, two of the most notable advances in gas welding in recent years involve the introduction of both elements into the welding operation.

In pure oxygen welding, the metal is preheated and a jet of pure oxygen played on the surfaces to be welded. This results in burning of the metal and high temperatures. The molten surfaces are then mechanically squeezed together and the oxidized metal completely squeezed out of the joint. Practically perfect welds are made in this way.

In a comparatively recent development of oxyacetylene welding, the metal at the surface is carbonized by an excess of acetylene in the flame which reduces its melting point and makes it more fluid. This results in greater speed and less likelihood of failure of fusion. The increase in carbon due to the carbonizing flame about offsets the former oxidation and loss of carbon with a neutral flame.

These developments were made by men who resolutely set out to do their own thinking; a difficult and dangerous form of human activity which may lead on the one hand to insanity, and on the other hand to great forward strides in human progress.

• • •

Seven-Eightieths

AN INTELLIGENT and humane executive in the Pittsburgh steel district offered 80 employed boilermakers free instruction in welding at company expense. He foresaw that some of them would have to learn welding or lose their jobs. Of the 80 to whom the offer was made, seven were interested enough to ask for further details.

In Cleveland, Schenectady, East Pittsburgh and elsewhere, other skilled craftsmen go to school at their own expense to learn welding.

About seven men out of 80 plan their own lives and get ahead. The other 73 must have someone to look out for them, see that they are employed, or if not employed, taken care of by the Government.

• • •

Any arc welding electrode which passes A. S. M. E. boiler code requirements under paragraphs U-68 and U-69 is a good product. The Boiler Code committee did an excellent job of standardization when it defined a good weld as determined by the physical properties of the weld metal after it is welded into steel plate. These standards have become a reference point in judging the qualities of welding rod. The responsible fabricator would do well to consider these standards for self defense. In any argument or litigation the standards are sure to be applied to the fabricator's welding. If he does not comply with the standards he is likely to find himself in a position which is difficult to defend.

• • •

Laminated steel plate is undesirable for use in making pressure vessels such as boiler drums or oil refinery apparatus where heat is transferred through the plate. However, such defective plate is entirely suitable for most machinery parts made of welded rolled steel. Steel producers who take a financial beating every month on rejected plate would do well to develop the market for use of such plate in machinery construction.

POWER DRIVES

Centrifugal Force

EFFECT of centrifugal force on a belt is subject to a wide variety of opinions. The common belief is that centrifugal force tends to "throw" the belt away from the pulleys and so results in a decrease in the effective friction. It is generally admitted that such forces need not be considered with belt speeds below 3000 feet per minute.

A somewhat different theory expressed by one prominent transmission engineer is that although the tendency of centrifugal force is to lift the belt from the pulleys, for that part of the belt which wraps the pulleys, this action is largely counteracted by the effect of the centrifugal force on the two strands of belt between the pulleys. Therefore, he contends, the effective friction must remain independent of the speed.

Extra Allowances for Speed

Centrifugal force, according to his theory, increases the internal strain on the belt. To take care of this increased strain he advocates an increase in belt sizes, as follows:

Belt Speed, Feet per Minute	Per cent Added
3000	0
3500	5
4000	10
4500	15
5000	20
5500	25
6000	30

For speeds between those indicated add 1 per cent for each additional 100 feet per minute.

The total belt tension necessary to drive the given load as determined after making proper allowances for increases necessary because of arc of contact, small pulley, vertical drives and other service factors, is then increased by the percentage indicated to include the extra tension resulting from centrifugal force. This total tension or belt load is then used to determine proper belt size by dividing by the permissable tension per square inch, or per inch of width of a definite thickness. These allowances, according to this engineer, are conservative and intended to put the belt engineer on the safe side.

Belt users, in general, are inclined to look at the practical side and not to enter into theoretical arguments. The most practical point in the whole problem is that an allowance should be made for high speed.

• • •

What, No Oilcan?

THE maintenance policy of removing the oilcan from the operator's kit and placing all lubrication of machines under the control of the department responsible for machine repairs is becoming more widely adopted in manufacturing plants.

Before this change can be made, however, it is necessary to study the bearings and determine not only the best lubricant but also the most effective method of applying lubricant to each bearing or sliding surface. Merely turning the oilcan over to another man does not solve the lubrication problem because it is not the oilcan alone but the open oil holes, inviting the entrance of dirt and grit, which are responsible. These not only must be protected but also should be provided with some type of reservoir to assure a steady supply of lubricant at the bearing, with only regular periodic replenishing.

With the wide variety of bottle, drip, wick, pressure, thermostatic, and force-feed lubricators, automatically or manually operated, and the widespread application of antifriction bearings, bearing trouble should be a rare occurrence. In some cases the savings in lubricant alone will repay the cost of the installation within a year or two. Uninterrupted production also returns handsome dividends.

• • •

Hunting Trouble

ONE noteworthy fact about drive trouble is that the cause, like the elusive flea, may not be where you think it is. Much electrical trouble is caused by defective mechanical equipment. A broken or smashed gear tooth can throw repeated momentary overloads on a motor and not only waste power but cause serious heating, sufficient in some cases to harm the motor, even though the protective overload devices are not operated because of the short duration of the peaks.

Defective clutches supply a continuous extra load to the motor, thus consuming additional power and occasionally causing electrical trouble, although generally the load plus the wasted power is within the motor capacity.

Misalignment with flexible couplings also results in a continuous overload which is added to the regular load and so may overload the motor sufficiently to overheat the motor seriously. Whenever a flexible coupling runs hot to the hand it is wise to check alignment. In some cases the heating may be due to mounting the motor so that the ends of the two shafts are so tight against each other that the motor cannot "float" in its bearings and seek its magnetic center, or is pushed to one side resulting in an end thrust on the bearings. Ordinarily motor bearings are not designed for end thrust.

These conditions indicate only a few of the many hidden causes of trouble that are especially baffling, particularly where the men handling mechanical and electrical trouble are under entirely separate divisional heads and are not permitted to encroach on each other's domain. This is one of the reasons for placing mechanical and electrical maintenance departments subordinate to one authority, such as the plant or maintenance engineer, even though the two departments operate independently.

• • •

Before condemning belts, especially on small pulleys, be sure you are using the proper tannage and size.

• • •

Where is the economy in buying the best equipment and then skimping on the drive? No machine tool can produce any faster than the wheels turn.

• • •

One plant places a metallic belt lacing machine in each of the large departments. A man who can be freed from his regular duties without interfering with production has been trained to operate it.

• • •

A single accident may cost several times the price of safe belt shifting equipment.

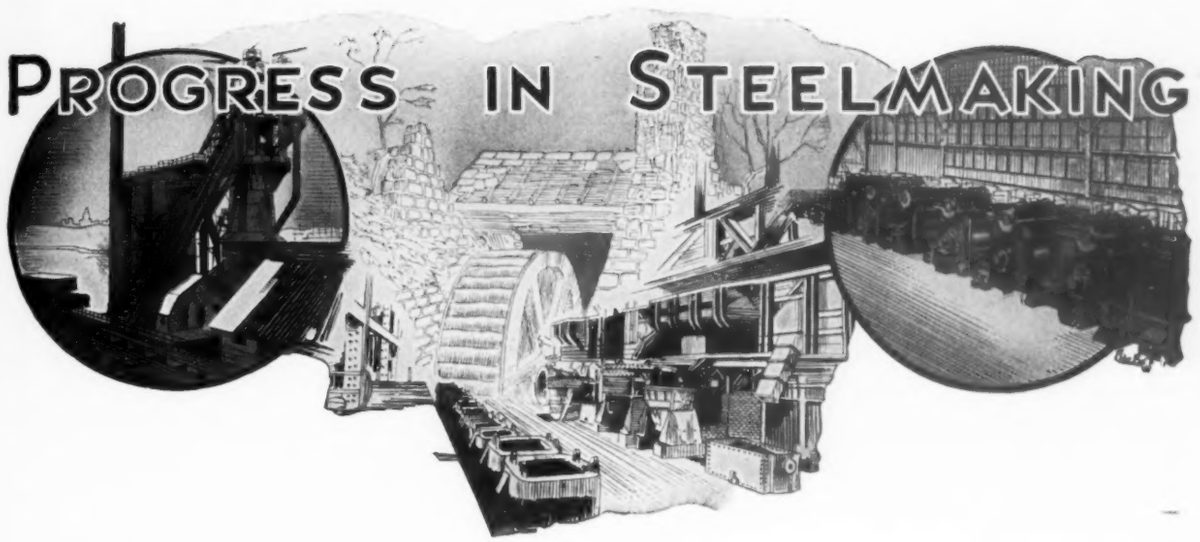
• • •

Oiling lineshafts and dangerous locations on machines during the lunch period is a safety measure worthy of more than general adoption. The man assigned to this takes his lunch period during working hours.

• • •

Is the drive giving you the spindle speeds you think it is? It will pay to find out.

PROGRESS IN STEELMAKING



Develops Coating Process

A process for coating steel sheets with aluminum is of recent development. Preliminary work on the new product is nearly complete and commercial production is expected to start within a few months. The process also is applicable to the production of rods, bars and shapes. The aluminum coated steel plate is ductile and should find wide application in the manufacture of automobiles, airplanes, and containers. Cans made of this commodity can be sealed air-tight without the use of solder.

• • •

Installs High-Speed Mill

Delivery speed of a tandem 4-high cold strip mill now being installed at a plant in the Great Lakes district is higher than any existing mill designed to roll this commodity. The main motors driving this mill have a larger total capacity than any so far built for this purpose. The mill includes three 4-high stands, each driven by a 1500-horsepower motor of 350/700 revolutions per minute. Measuring and regulating the tension in the strip between roll stands will be accomplished automatically by special electrical equipment.

• • •

Roll Oil Serves As Coolant

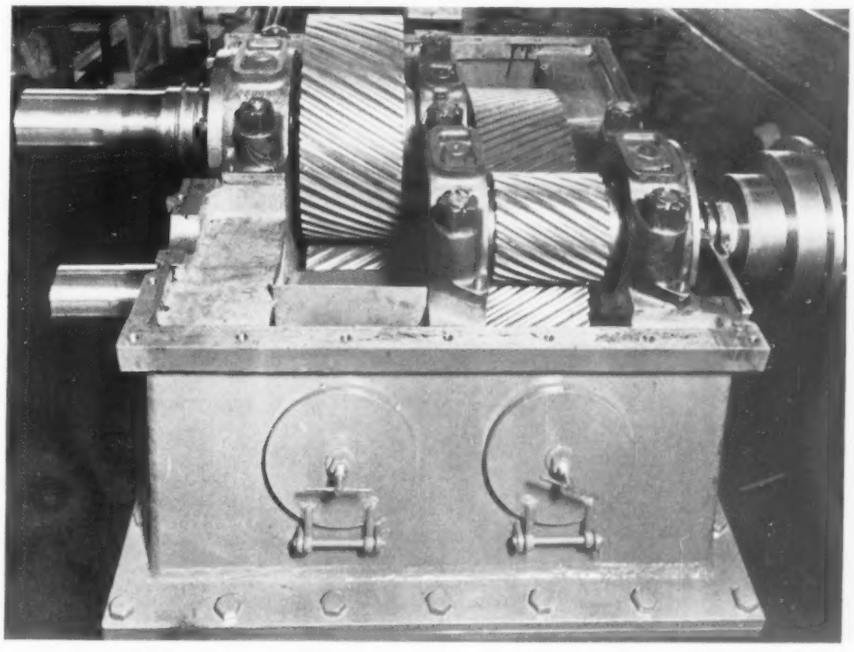
Soluble oil, a combination of mineral oil and a saponifying agent, is considered one of the leading roll oils for coating strip steel while in transit through 4-high finishing mills, particularly since the speed of rolling on this type unit has been increased. Strip being delivered from the finishing pass at a speed less than 100 feet a minute requires a lubricant having high film strength and a certain amount of coolant. Strip delivered at 900 feet a minute requires a "roll oil" with a large amount of coolant and little film strength.

• • •

Imparts Smooth Finish

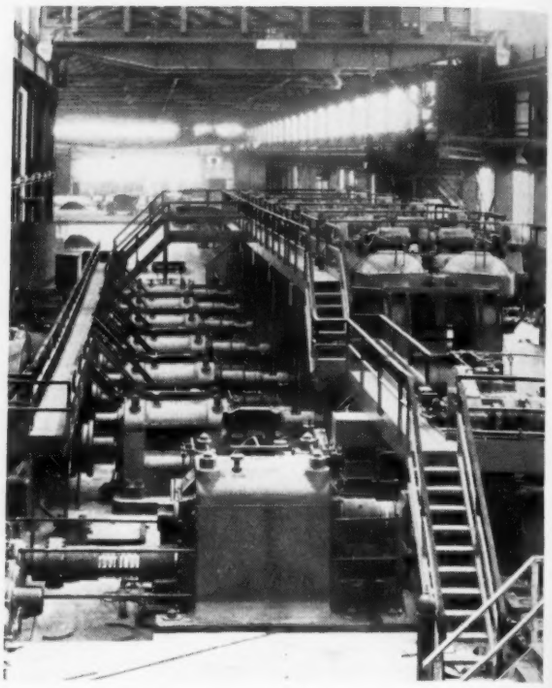
Pig machine wash used at a Southern blast furnace for coating the surface of the molds consists of a mixture of 50 per cent of pulverized coal and 50 per cent hydrated lime. This wash imparts a smooth surface to the pig and tends to eliminate stickers. The molds first are cleaned by a spray of steam and then are coated with the mixture. The facing is dried as the strand passes over a gas flame. The thick coating, which accumulates at the shoulders of each mold, is removed by a mechanical brush inasmuch as it usually is moist and is likely to cause an iron boil in the mold.

Welded Plate Construction Is Employed



A new application of welded plate construction is shown in the accompanying illustration of the 150-horsepower combination gear drive and pinion stand which has been manufactured for the new 42-inch, 4-high, temper-pass mill at the Gary, Ind., plant of American Sheet & Tin Plate Co. The plates utilized were produced by Carnegie-Illinois Steel Corp., Pittsburgh; the combination drive and pinion stand was fabricated by the Falk Corp., Milwaukee

New 43-Inch Strip Mill at McDonald Works Is Completed



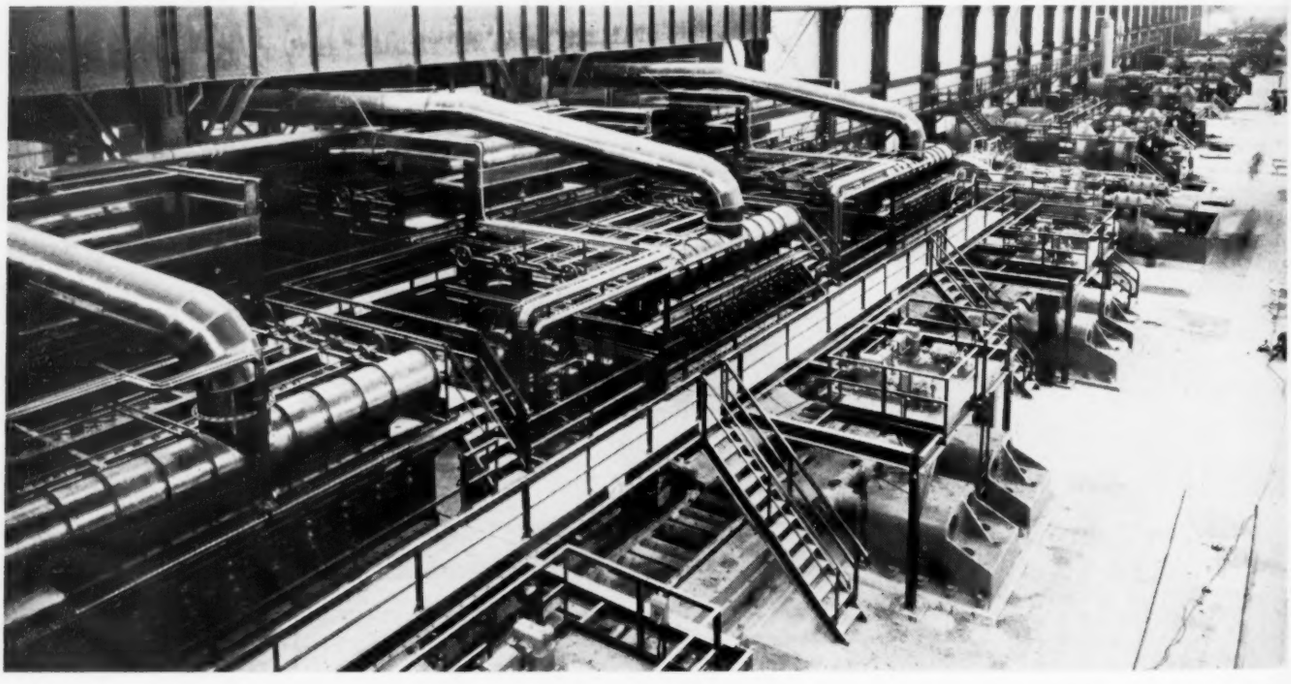
Front end of 6-stand finishing train looking toward rear of mill

DURING the last half of 1934, the United States Steel Corp. approved an appropriation for its subsidiary, the Carnegie-Illinois Steel Corp., for the construction of a continuous strip mill at the McDonald plant in the Youngstown, O., district. Ground was broken for the construction of this mill on Jan. 17, 1935. The buildings housing the mill and its auxiliary equipment cover an area of approximately eight acres.

Preparation of the site and foundations required 48,000 cubic yards of excavation, 38,000 cubic yards of concrete, 1,900,000 pounds of reinforcing steel, and 150,000 cubic yards of slag fill. Construction of the mill building required 11,000,000 pounds of structural steel; and 1,250,000 pounds of corrugated sheeting.

The mill buildings are exceptionally well-lighted and ventilated, having 38,000 square feet of skylight, 63,000 square feet of windows, and 46 ventilators of sufficient capacity for 1½ to 6 complete air changes per hour.

The slab yard, 110 x 420 feet, has a capacity for storing 12,000 tons of steel. The mill is served by three natural gas fired, continuous-type heating furnaces, each 18 feet wide and 75 feet long inside, with sufficient capacity to heat 50 tons of



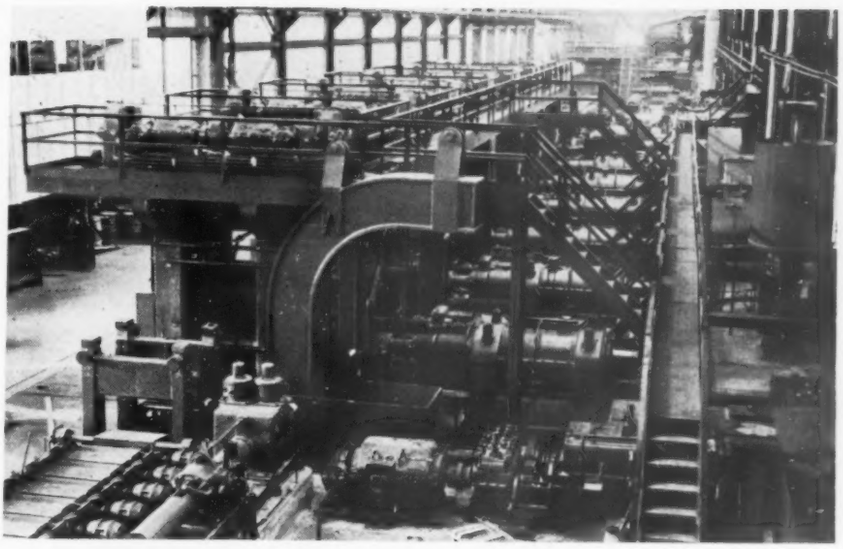
General view of new 43-inch continuous strip mill recently completed at McDonald works of Carnegie-Illinois Steel Corp., McDonald, O.

steel slabs per hour per furnace.

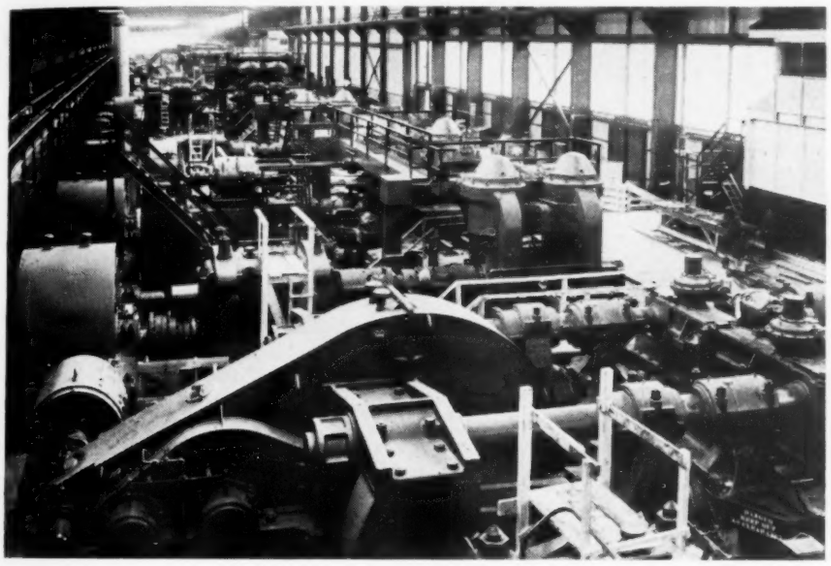
Slabs are discharged from the furnaces onto a delivery table leading to the mill, which is of the continuous type, and consists of the following, in the sequence named:

1 Horizontal 2-high scale breaker.
1 Slab reducer.
3 Two-high roughing stands with 1 vertical edger.
1 Four-high roughing stand with vertical edger.
1 Delay and rocking table.
1 Horizontal 2-high scale breaker.
1 Flying crop shear.
6 Four-high finishing stands.
1 Flying shear for cutting lengths 10 to 30 feet.
2 Coilers.
1 Piler for cut lengths.

The length of the mill, including heating furnaces, is approximately 1200 feet. All rolls have a 43-inch wide face. The mill is capable of delivering rolled product from the finishing stand at the rate of 2000 feet per minute.



Finishing mills looking toward delivery side of No. 6 stand and front of mill



Roughing mills showing the slab reducer in right foreground

into as many as seven multiples.

Additional auxiliary equipment consists of a 4-arm batch pickling unit, a natural gas fired normalizing furnace, a skin pass mill, a squaring shear, roller levelers, and oiling equipment.

The mill has 46 Selsyn devices which allow micrometer adjustment of the rolls, guides, etc., and are electrically indicating. They afford a silent thickness indication of the product in all parts of the mill proper.

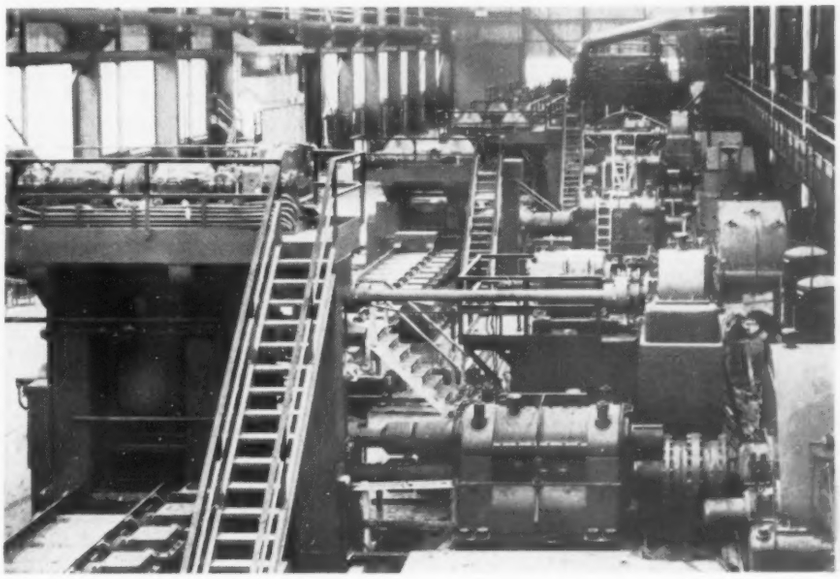
The mill is equipped with pumping equipment and sprays for use in breaking scale as the steel passes through the mill; water at 1000 pounds per square inch pressure being used for this purpose.

All stands in the mill and the major portion of its auxiliary equipment are driven by individual electric

(Please turn to Page 40)

Hot coils from the mill are conveyed to a storage area in a coil storage building, where they are weighed and allowed to cool. From here they either are loaded into cars for direct shipment or put on another conveyor serving three coil processing units. These units can process the coils for prevention of "coil break," trim the edges or slit the coils into as many as seven multiples or shear into accurate lengths.

Hot pack material in lengths from 10 to 30 feet, from the mill is weighed and placed on racks in coiler building for cooling. They then are transferred by either conveyor or electric transfer car to three pack processing units. These units shear the material to accurate cut lengths, trim the edges, or slit the single piece



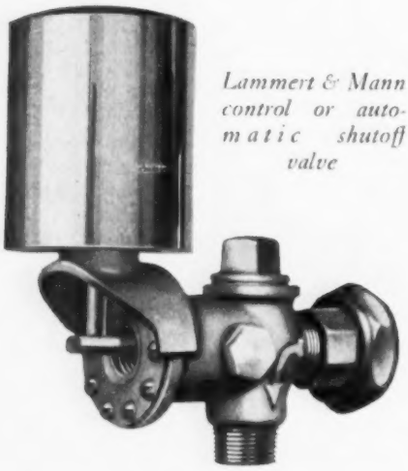
View of roughing train looking toward the front of the mill

NEW EQUIPMENT

Automatic Shutoff Valve—

Lammert & Mann Co., Chicago, has introduced a control or automatic shutoff valve adapted to automatic operation, remote control, or to automatic operation plus an interlock with the manual-reset device. The valve, shown herewith, has two moving parts and is held firmly in position when closed by a cadmium-plated spring. The valve needle and seat are of stainless steel, and other parts are of noncorrosive metals. Any part of the valve can be removed quickly without detaching the valve from the line.

The air-control mechanism is of the piston type, and a pressure of 3 to 50 pounds may be used. The air-operated valve is used on oil burners of the air-atomizing type. In the steam or hydraulic control, the pressure operates through a bellows and no stuffing boxes or packed joints are used.

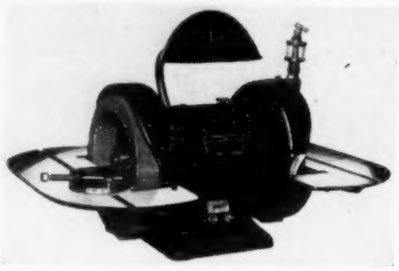


Lammert & Mann control or automatic shutoff valve

♦ ♦ ♦

Tool Grinder—

Thomas Prosser & Son, 15 Gold street, New York, has brought out a new cemented carbide tool grinder that is equipped with two quick-setting tables, carefully planed and slotted with graduated indexes. This unit, shown herewith, permits both rough and finish grinding of cemented carbide tools with cup wheels to accurate angles with flat surfaces. Finishing wheels may be either fine grain silicon carbide or diamond impregnated grinding wheels. An oil feeding attachment is furnished when diamond wheels are used, which permits keeping the face of the wheel well oiled while in use. The grinder also can be supplied with other types of grinding wheels for grinding high speed steel and other tools, and also is adaptable to general toolroom work.



Prosser widia model AA cemented carbide tool grinder

♦ ♦ ♦

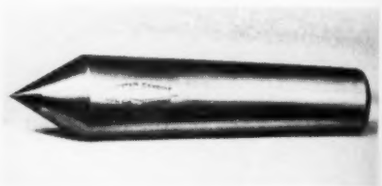
Semiautomatic Manufacturing Lathe—

Monarch Machine Tool Co., Sidney, O., is announcing a new addition to its line of manufacturing lathes, a 12-inch type T double carriage semiautomatic unit, shown herewith. It is designed to handle the smaller classes of production jobs where a quick convenient hand return to the tool slide is desirable, and is equipped with automatic length feed stop, so arranged that a quick tool setup for either single or multiple jobs can be made. This new lathe will operate at spindle speeds as high as 2000 revolutions per minute in order to take advantage of the new cemented carbide turning tools. Swing over bed ways is 12½ inches, while the swing over the carriages is 7 inches. Distances between centers can be 18 inches base length, 30 and 42 inches.

♦ ♦ ♦

Tipped Lathe Centers—

Tungsten Carbide Tool Co., Detroit, now is producing tungsten carbide tipped lathe centers, shown herewith. Interest in this development seems to be about equally divided for both finishing and roughing operations. The long life and minute wear of the tungsten carbide tips enables maintenance of accuracy in production for finishing operations over long periods of time. For roughing, the new centers permit much heavier cuts than with conventional types, the manufacturer claims.



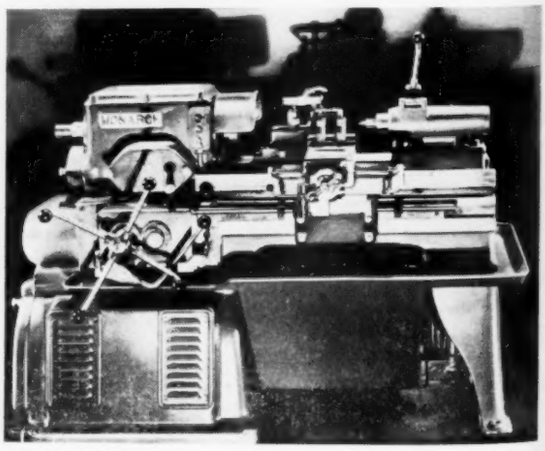
Tipped lathe center offered by Tungsten Carbide Tool Co.

♦ ♦ ♦

Paint Filter for Spray Booths—

DeVilbiss Co., Toledo, O., has developed a simplified spray booth paint filter. Designed for use with such ma-

MOTOR is mounted inside the cabinet leg of this Monarch manufacturing lathe. Convenient pick-off gears are provided to change spindle speeds and to change feeds on both the front and rear carriage



Now—eliminate annealing

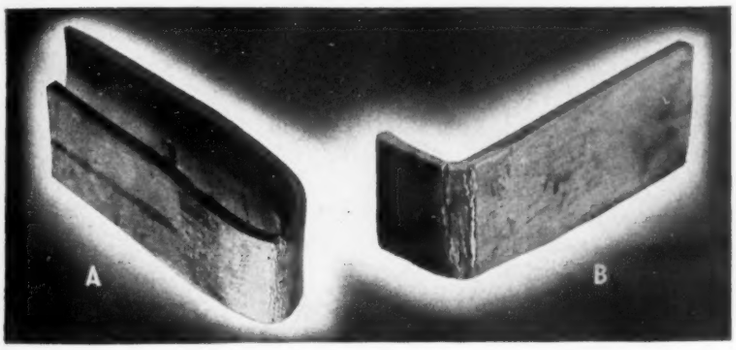
OF WELDED AUSTENITIC CHROMIUM-NICKEL STEEL

with Ferrocolumbium

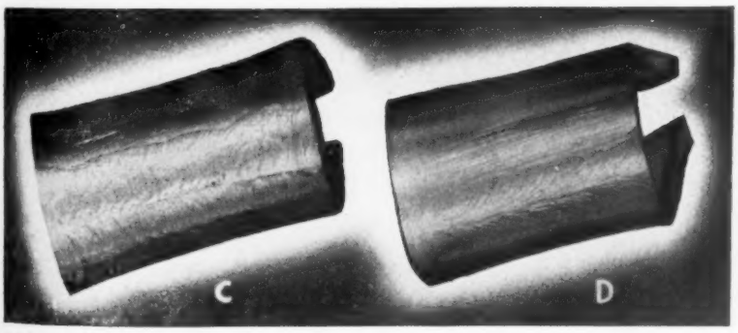
• Ferrocolumbium provides a convenient and enonomical means of adding columbium to chromium-nickel steels. Columbium does not readily burn out to a detrimental degree during welding by any method. Hence columbium-bearing 18-8 stainless steel can be used after welding with columbium-bearing welding rod without subsequent annealing. There is no increased susceptibility to corrosion in or adjacent to the weld seam. The valuable properties of normal 18-8 stainless steel are not impaired.

Columbium inhibits intergranular deterioration of the austenitic chromium-nickel steels when exposed concurrently to high temperatures and chemical corrosion. It makes possible the use of 18-8 stainless steel at temperatures between 1000 deg. F. and 1500 deg. F. without developing intergranular corrosion.

Ferrocolumbium is available from Electro Metallurgical Company. Electromet Metallurgists will gladly further explain its advantages and assist you in its use. The booklet "Effects of Columbium in Chromium-Nickel Steels" will be sent to you on request. Write for a copy today.



Bending tests on (A) arc-welded normal 18-8 stainless steel and (B) oxy-acetylene-welded normal 18-8 stainless steel after boiling for 400 hours in acidified copper sulphate. Note the severe cracking adjacent to the weld seam, showing intergranular corrosion.



Bending tests on (C) arc-welded columbium-bearing 18-8 stainless steel and (D) oxy-acetylene-welded columbium-bearing 18-8 stainless steel after boiling for 400 hours in acidified copper sulphate. Note the complete absence of cracking, showing absence of intergranular corrosion.

ELECTRO METALLURGICAL COMPANY
Unit of Union Carbide and Carbon Corporation

UCC

CARBIDE and CARBON BUILDING
30 EAST 42nd ST., NEW YORK, N. Y.

Electromet
Ferro-Alloys & Metals

PRODUCTS OF A UNIT OF
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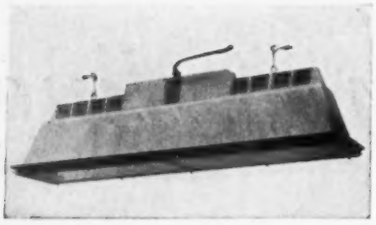


Westinghouse trough lighting unit

terials as paints, primers and enamels where the residue is heavy and sticky, the filter is not intended for use in the spraying of lacquer. Filter is an independent and complete assembly. It is made in several sizes to accommodate the requirements of the various spray booth sizes. Bottom end of the filter frame is left open to facilitate the draining of accumulated paint into the drip pan and for the easy removal of the baffles for cleaning.

♦ ♦ ♦

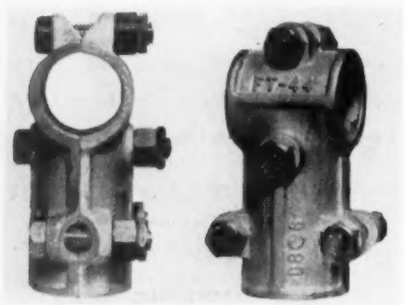
Trough Lighting Unit—

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently brought out a new trough type lighting unit, shown above. It is equipped with two 400-watt high intensity mercury lamps with current limiting transformers, and three 500-watt inside frosted Mazda lamps spaced alternately with the mercury lamps. The trough has flashed opal glass to diffuse the light.

♦ ♦ ♦

Solderless Connectors—

Delta-Star Electric Co., Chicago, announces a complete line of high conductivity solderless clamp type



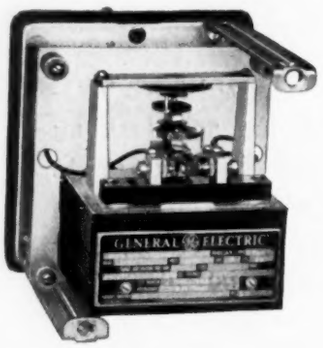
Delta-Star high-conductivity solderless clamp type connectors

connectors. As shown herewith, they are made in two equal halves, the finished cast surface presenting a large number of sharp minute projections which, when the bolts are tightened, dig into the copper tube connector and insure a permanent nonslip contact.

♦ ♦ ♦

High-Speed Relay—

General Electric Co., Schenectady, N. Y., is announcing a high-speed relay for protection of mercury arc rectifiers. The device, shown herewith, has unique features of design that are claimed to give a higher torque level for a given size and input, and faster response than other induction relays. Torque is developed in the same way as it is in an induction-disk watt-hour meter or relay by inducing eddy currents in an aluminum rotor, but this rotor is in the form of a cup (or cylinder) rather than a flat disk. The arrangement of the eight magnetic poles symmetrically around a central core with the rotor turning in the annular air gap thus formed is suggestive of a small split-phase induc-



G-E high-speed relay for protection of mercury arc rectifiers

tion motor, which indeed the induction-cylinder relay is. The central core is fixed to the stator frame; the aluminum cup alone turns. This construction makes the relay fast.

♦ ♦ ♦

Diamond Holder—

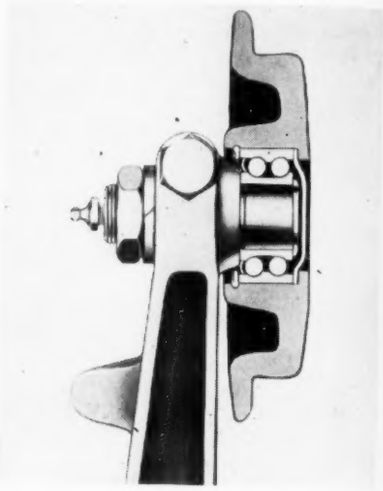
J. K. Smit & Sons Inc., 157 Chambers street, New York, is introducing a combination water and air-cooled diamond holder that directs a stream of cooling water not only on the point of the diamond, but also on the metal immediately back of the diamond. Arrows in the accompanying illustration indicate the water or air channels. Because in the truing of grinding wheels one of the major problems that arises is heat, this design has been developed to produce cooling effects that will prolong the life of the diamond. It provides water cooling for wet grinding and in dry grinding the same channels insure a maximum of air cooling.

Arrows indicate water or air channels in this Smit diamond holder

♦ ♦ ♦

Tramrail Trolley Wheel—

Osborn Mfg. Co., 5401 Hamilton avenue, Cleveland, announces that an important development in its tramrail systems is a trolley wheel of improved design. Illustrated herewith is a cutaway view of the new wheel which is a special analysis high-strength iron



Osborn tramrail trolley wheel

casting with deep-chilled tread and flange. This provides a hard smooth long-wearing tread surface. Slight crown of the wheel tread brings the wear on the rail flange in from the outside. Another feature is the double row shielded type ball bearing.

♦ ♦ ♦

Polishing Machine—

E. Leitz Inc., 60 East Tenth street, New York, is offering an improved type of automatic, magnetic polishing machine, model D. Features include a specimen holder that will accommodate one to three specimens at a time, and a transmission device that causes the specimen holder to rotate, whereby the specimen receives an automatic motion simulating that one that is usually produced when polishing by hand. Various speeds for the polishing of plate from 350 to 1000 revolutions per minute are provided for and the speed can be changed while the machine is in action without interrupting the polishing process. The mag-

Guthrie - Leitz polishing machine is equipped with solution agitator and blowing device. The holder accommodates one to three specimens at a time

netic pull on the specimen can be regulated by means of a dial, depending upon the hardness of the specimen to be polished.

♦ ♦ ♦

Duplex Strainer—

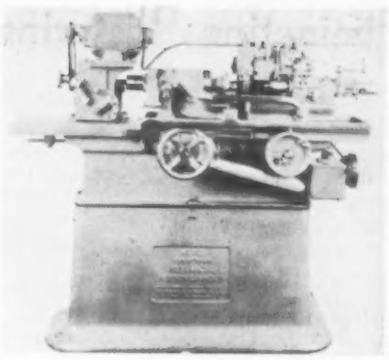
Anthony Co., 47-33 Fifth street, Long Island City, N. Y., is marketing a new duplex strainer which has features that adapt it to the straining of many liquids, particularly those containing tarry and viscous materials. The device, designed especially for oil burning systems, consists of two straining chambers in one body, each complete in itself. One key controls the flow of liquid through both chambers. Movement of the key handle instantly cuts out either chamber as desired. One quarter turn completes the operation. A blow-out arrangement makes it possible to purge the chambers and blow the baskets free of obstructions without interrupting the normal liquid flow. The purging connection is located at the top as shown in the accompanying illustration.

♦ ♦ ♦

Self-Balancing Potentiometer

Weston Electrical Instrument Corp., Newark, N. J., is introducing a new high-speed self-balancing potentiometer, shown herewith. New possibilities for process control and measurement of quantitative changes convertible to electrical units are expected to result from this recent development which continuously balances itself at split-second speeds by a photoelectric method. The unit already has been applied at one rolling mill installation to produce a chart record of temperature variations along a sheet of steel as the sheet moves at its usual speed from one roll to the next.

Above—Weston high-speed self-balancing potentiometer



Van Norman heavy-duty unit for turning and grinding pistons

♦ ♦ ♦

High Speed Piston Grinder—

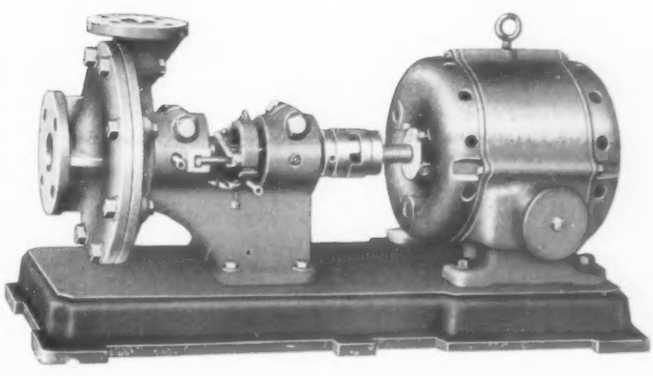
Van Norman Machine Tool Co., Springfield, Mass., is bringing out a fast heavy-duty machine for turning and grinding pistons. It finishes pistons of both the straight and cam type, a shift of a lever converting the unit from straight to cam grinding. High speed of the new machine, shown herewith, is made possible not only by the increased spindle speeds and wheel feeds, but also by the simplicity and ease of operation that characterizes the unit. A number of speeds are available at the wheel and work heads.

♦ ♦ ♦

Unit Acid Centrifugal Pumps—

Chemical Equipment Co., Montpelier, Ind., is building a unit centrifugal pump. The casing is of the volute type whereby it is possible to obtain a high vacuum and also is so shaped and the discharge is in such a position that the unit cannot become air or gas bound. This feature is important, the company claims, especially when handling hot liquids or those of high vapor pressure at room temperatures. The pump, shown herewith, can be turned in the bracket to any suitable angle.

Left—Anthony duplex strainer designed especially for oil burning systems



Right—This centrifugal pump built by Chemical Equipment Co. is equipped with a slinger and acid catcher

Eliminating Blistering of Enamels

(*Concluded from Page 25*)

of the type having a stable microchill, the silicon should be low, the manganese high, and the phosphorus low. The iron should be poured as hot as possible. A typical analysis would be:

	Per cent
Total carbon	3.50
Graphitic carbon	2.95
Combined carbon	0.55
Silicon	2.25
Manganese	0.65
Phosphorus	0.60
Sulphur (max.)	0.10

If we keep the silicon high and the manganese high, or the silicon low and the manganese low, we may produce an iron that is not definitely one type or the other, but in between the two. We may obtain an iron having a high percentage of graphite but with a fairly hard microchill, not very easily removed, or an iron having a comparatively high percentage of combined carbon, but not stabilized. Based on the theory of blistering of cast iron enamels, it seems logical that we should keep all factors favoring the production of a nonblistering iron of one type or the other.

Trouble with Facings

There are causes of blistering which are not necessarily connected with the analysis or structure of the iron. Enamelers are generally warned not to use carbonaceous facings, as they are liable to impregnate the casting with carbonaceous material which burns out and causes blistering in the enameling process. Many enamelers, however, report that they use facings without encountering trouble. This is only a suggestion, but perhaps if the enameling iron is of the type with a comparatively soft microchill, the facing material is removed in the regular sandblasting operation, while in the case of irons having a harder microchill, the facing material is not completely removed.

Excess moisture in the molding sand is sometimes a cause of blistering. This might be due to one of two causes. The wet sand would give the surface of the casting a more severe chilling than dryer sand. This would cause a harder microchill, especially on castings of thin section, or in some other way upset the normal surface structure. Or the castings, when cool, and if not knocked out soon, may absorb moisture from the sand which would be driven off as steam in the burning operation and cause blistering.

Regarding soundness of castings, the silicon content of cast iron usually avoids spongy castings, but manganese also exerts an influence in this respect. Manganese slightly lowers the temperature of solidification and increases the solidification period, and so a longer time is available for the evolution of dissolved gases. Enamelers, therefore, should never encounter spongy or unsound castings, provided the molds are properly gated to permit escape of dissolved or entrapped gases.

43-Inch Strip Mill at McDonald Works Ready

(*Concluded from Page 35*)

motors, of which there are 765, ranging in size from ¼ to 3500 horsepower. For cooling the main mill motors, 600,000 cubic feet per minute of cleaned air is required.

The buildings are equipped with a total of 12 electric overhead traveling cranes, ranging in capacity from 15 to 60 tons.

Power for operating the mill is generated at the Ohio Works of the Carnegie-Illinois Steel Corp., Youngstown, O., at 6600 volts. It is stepped up to 44,000 volts by transformers and transmitted 7 miles to the McDonald mills where it is stepped down to 6600, 220, and 110 volts by transformers. The above 6600-volt alternating current is converted by motor-generator sets to direct current, 600 and 250 volts.

The product of the mill is strip steel up to 37 inches wide and in thickness ranging from 18 gage to ⅜-inch, with a capacity of 30,000 tons per month. This material can be supplied in coiled form up to ¼-inch thick, ranging from 180 to 300 pounds per inch of width, or in cut lengths ranging from 30 inches to 30 feet, and up to a maximum of ⅜-inch thickness.

Welfare buildings of all steel, insulated construction, and equipped with modern convenience facilities, have been provided for the workmen, as well as cool drinking water fountains in convenient locations throughout the mill.

The construction of the mill required 10,100 cars of material, 11 miles of pipe, and 12,000 lineal feet of sewers.

New Trade Publications

Fans—Hunter Fan & Motor Co., Fulton, N. Y. A catalog of Hunter products, including a late development, the 24-inch airspread fan.

Rubber Goods—Raybestos-Manhattan Inc., Passaic, N. J. A catalog covering belting, hose, packing, molded goods, friction material, rubber coverings, abrasive wheels, etc.

Lathes—Pratt & Whitney Co., Hartford, Conn. A circular, No. 419, announcing new model "C" lathe, both 14 and 16-inch, of unusual accuracy, rigidity, and convenience.

Measuring Machines—Illinois Tool Works, 2501 North Keeler avenue, Chicago, Ill. A complete set of descriptive literature on the Illinois gear measuring machines.

Tubular Products—Republic Steel Corp., Massillon, O. A 16-page, 2-color folder, listing and describing various types of tubular products manufactured by Republic and its subsidiary, Steel & Tubes Inc.

Motors—Ohio Electric Mfg. Co., 5900 Maurice avenue, Cleveland. Two bulletins; 212-B shows dimensions of the various types of fractional motors in standard frames; 211-A shows dimensions of special designs and identifies them with standard frames.

Furnaces—Johns-Manville, 22 East Fortieth street, New York. A booklet entitled "Fire Tamers" containing information on refractory cement; a brief description of the various everyday uses of the several kinds of refractories is presented.

Furnaces—Detroit Electric Furnace Co., 825 West Elizabeth street, Detroit. A combination handbook and catalog, with information on various rocking arc furnaces, and a section for auxiliary furnace and foundry equipment; a section of special interest to power companies is a feature.

Furnaces—Philadelphia Drying Machinery Co., 3351 Stokley street, Philadelphia. Two bulletins, Nos. 935 and 935-A, devoted respectively to gas fired and oil fired furnaces, in single and twin-chamber models, with details of construction, design, and tables of sizes and capacities.

Pneumatic Tools—Worthington Pump & Machinery Corp., Harrison, N. J. A leaflet, No. W-1200-B15, on clay spade, trench digger, and backfill tamper, with specifications for each; a listing of products for construction, quarries and mines is included.

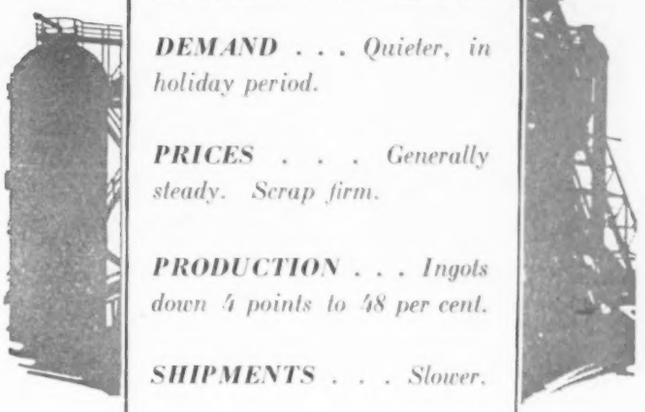
Abrasives—American Foundry Equipment Co., 555 Byrkit street, Mishawaka, Ind. A book No. 111, on the subject of "Wheelabrating"—the airless abrasive cleaning and preparation method, whereby abrasive is thrown by centrifugal and tangential force on products to be cleaned.

Speed Reducers—Link-Belt Co., 2045 West Hunting Park avenue, Philadelphia. A 32-page catalog No. 1519 covering its line of single, double and triple reduction herringbone gear speed reducers for large speed ratios, heavy and shock loads, with stress on the "RD" double-reduction reducer.

Carbon Brushes—Ohio Carbon Co. 12508 Berea road, Lakewood, O. A loose-leaf catalog listing such applications as fractional horsepower motor brushes for direct current and single-phase repulsion-induction alternating current machines; items are classified both under makes of motors and under the heading of uses.

Holidays' Effect Mild; Rapid Rebound Seen

Steel Rate at 48 Per Cent in Christmas Week; Industry Confident of 1936 Gains



MARKET IN TABLOID

DEMAND . . . *Quieter, in holiday period.*

PRICES . . . *Generally steady. Scrap firm.*

PRODUCTION . . . *Ingots down 4 points to 48 per cent.*

SHIPMENTS . . . *Slower.*

CLOSING a year, which in point of iron and steel production was 30 per cent better than 1934, the industry last week was looking forward confidently to continuing gains in 1936.

A fresh impetus has been imparted to steelworks activity by developments over the past few months, which steelmakers believe will carry far into the new year. The temporary holiday interruptions, therefore, have been of little significance in the general outlook for rising demand from principal consumers.

Due to suspensions for Christmas, steelworks operations last week averaged 48 per cent, down 4 points from the preceding week. In the same week last year the rate was 39 per cent. This week, with the intervention of New Year day, the pattern is expected to be much the same as last week, with indications pointing thereafter to a rapid rebound. At Chicago the recovery in raw steel production will be slower, as the Inland Steel Co. has taken off eight open hearths for several weeks pending improvements which have been started on its blooming mill.

Steel specifications from automobile, tractor and farm implement manufacturers declined last week only slightly from their previous volume, although automobile assemblies, as a consequence of the holiday, dropped to 71,000 from 103,600 in the preceding week. Because of this sustained demand for steel, strip mill production immediately following Dec. 25 snapped back to 60 per cent, sheet mills to 55 per cent. Releases for steel and alloy steel bars, and wire also have been especially good.

Finishing mills generally have substantial orders on their books for January delivery, while heavy shipments of semifinished steel seem assured for completing fourth quarter contracts.

Some steel is being specified on the 115,000 tons required for Pennsylvania's 10,000 freight cars. Demand from car repair shops is in the largest volume of the year, stimulated by gains in car loadings and urgent need for equipment. Wabash has purchased 10,000 tons of rails, and New York Central has applied for a federal loan to buy 35,000 tons.

Structural shape awards in the week dropped to 17,295 tons. December was the most active month of the year in cast pipe awards, mainly for PWA projects.

Although leading producers are holding firmly to the advance of $2 a ton on semifinished steel for new orders for first quarter, one small producer is offering wire rods at the former level. An effort is being made to strengthen sheet and strip prices at Detroit. Eastern sheetmakers have announced increased extras on off-sizes of all sheets, except electrical grades, and have restored the extras on formed roofing which were in effect prior to Aug. 20. Fluorspar for barge shipment has been raised 50 cents a ton.

Pig iron producers have reduced stocks through heavy shipments. They have few uncompleted fourth quarter contracts, and are booking some tonnage for January at the $1 a ton advance.

Scrap is strong, but the market is quiet. A Buffalo melter purchased 10,000 tons of No. 2 heavy melting steel at $11.50, up 75 cents. It is reported Japan has more scrap than it requires and is negotiating with Italy to divert some of its surplus.

November iron and steel exports, 205,242 tons, were 14 per cent less than those in October. Scrap shipments declined from 145,850 tons to 104,961 tons, so that a slight increase was shown for iron and steel products. For 11 months this year all iron and steel exports total 3,828,067 tons, 50 per cent more than in 1934.

Pittsburgh steelworks operations last week dropped 6 points to 34 per cent; Chicago 10½ to 50; Cleveland 42 to 40; Wheeling 7 to 70; Buffalo 3 to 47; eastern Pennsylvania 1 to 34½; New England 6 to 77. Youngstown rose 3 to 59. Detroit held at 88; Birmingham 56.

STEEL's price composites are steady, iron and steel $33.31, finished steel $53.70, scrap $13.12.

COMPOSITE MARKET AVERAGES

	Dec. 28	Dec. 21	Dec. 14	One Month Ago Nov., 1935	Three Months Ago Sept., 1935	One Year Ago Dec., 1934	Five Years Ago Dec., 1930
Iron and Steel	$33.31	$33.31	$33.32	$33.15	$32.82	$32.39	$31.69
Finished Steel	53.70	53.70	53.70	53.70	53.70	54.00	49.30
Steelworks Scrap	13.12	13.12	13.29	12.92	12.65	11.02	10.77

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire sheets, plates, shapes, bars, black pipe, rails, alloy steel hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Dec. 28, 1935	Nov. 1935	Sept. 1935	Dec. 1934
Finished Material				
Steel bars, Pittsburgh	1.85c	1.85	1.85	1.80
Steel bars, Chicago	1.90	1.90	1.85	1.85
Steel bars, Philadelphia	2.16	2.16	2.11	2.09
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.75
Shapes, Pittsburgh	1.80	1.80	1.80	1.80
Shapes, Philadelphia	2.01½	2.01½	2.01½	2.00½
Shapes, Chicago	1.85	1.85	1.85	1.85
Tank plates, Pittsburgh	1.80	1.80	1.80	1.80
Tank plates, Philadelphia	2.00	1.99	1.99	1.98½
Tank plates, Chicago	1.85	1.85	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.40	2.40	2.40	2.40
Sheets, No. 24, galvan., Pitts.	3.10	3.10	3.10	3.10
Sheets, No. 10, hot rolled, Gary	1.95	1.95	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.50	2.50	2.50	2.50
Sheets, No. 24, galvan., Gary	3.20	3.20	3.20	3.20
Plain wire, Pittsburgh	2.30	2.30	2.30	2.30
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.25
Wire nails, Pittsburgh	2.40	2.40	2.40	2.60
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$30.00	29.50	28.00	28.00
Sheet bars, open-hearth, Pitts.	30.00	29.50	28.00	28.00
Billets, open-hearth, Pittsburgh	29.00	28.50	27.00	27.00
Wire rods, Pittsburgh	38.00	38.00	38.00	38.00

	Dec. 28, 1935	Nov. 1935	Sept. 1935	Dec. 1934
Pig Iron				
Bessemer, del. Pitts.	$20.8132	$20.8132	$19.8132	$19.76
Basic, Valley	19.00	19.00	18.00	18.00
Basic, eastern, del. eastern Pa.	20.8132	20.8132	19.8132	19.76
No. 2 fdry., del. Pitts.	20.3132	20.3132	19.3132	19.26
No. 2 fdry., Chicago	19.50	19.50	18.50	18.50
Southern No. 2, Birm.	15.50	14.75	14.50	14.50
Southern No. 2 del. Cincinnati	20.2007	20.2007	19.2007	19.13
No. 2X eastern, del. Phila.	21.6882	21.6882	20.6882	20.63
Malleable, Valley	19.50	19.50	18.50	18.50
Malleable, Chicago	19.50	19.50	18.50	18.50
Lake Sup. charcoal, del. Chi.	25.2528	25.2528	24.2528	24.04
Ferromanganese, del. Pitts.	90.13	90.13	90.13	89.79
Gray forge, del. Pitts.	19.6741	19.6741	18.6741	18.63
Scrap				
Heavy melting steel, Pittsburgh	$14.25	13.65	13.45	12.95
Heavy melt. steel, No. 2, east. Pa.	11.25	11.00	11.25	9.30
Heavy melting steel, Chicago	13.25	13.20	12.55	10.55
Rails for rolling, Chicago	14.25	14.30	13.90	11.65
Railroad steel specialties, Chicago	14.25	13.75	13.75	11.90
Coke				
Connellsville, furnace, ovens	$3.50	3.55	3.25	3.60
Connellsville, foundry, ovens	4.00	4.35	4.00	4.60
Chicago, by-product foundry, del.	9.75	9.75	9.25	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week

Sheet Steel

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.85c
Gary	1.95c
Chicago, delivered	1.98c
New York, del.	2.20c
Philadelphia, del.	2.16c
Birmingham	2.00c
St. Louis, del.	2.18c
Pacific ports, f.o.b. cars, dock	2.40c

Hot Rolled Annealed No. 24

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
*Detroit, delivered	2.45c-2.60c
New York, del.	2.75c
Philadelphia, del.	2.71c
Birmingham	2.55c
St. Louis, del.	2.72c
Pacific ports, f.o.b. cars, dock	3.05c

Galvanized No. 24

Pittsburgh	3.10c
Gary	3.20c
Chicago, delivered	3.23c
Philadelphia, del.	3.41c
New York, del.	3.45c
Birmingham	3.25c
St. Louis, del.	3.43c
Pacific ports, f.o.b. cars, dock	3.70c

Tin Mill Black No. 28

Pittsburgh	2.75c
Gary	2.85c
St. Louis, delivered	3.08c

Cold Rolled No. 10

Pittsburgh	2.50c
Gary	2.60c
*Detroit, delivered	2.55c-2.70c
Philadelphia, del.	2.81c
New York, del.	2.85c
Pacific ports, f.o.b. cars, dock	3.10c

Cold Rolled No. 20

Pittsburgh	2.95c
Gary	3.05c
*Detroit, delivered	3.00c-3.15c
Philadelphia, del.	3.26c
New York, del.	3.30c

Enameling Sheets

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c
Gary, No. 10	2.60c
Gary, No. 20	3.20c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke base (box) Pittsburgh	$5.25
Do., waste-waste	2.75c
Do., strips	2.50c
Long ternes, No. 24 unassorted, Pitts.	3.40c
Do., Gary	3.50c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	23.00	24.00
Plates	26.00	28.00
Sheets	33.00	35.00
Hot strip	20.75	22.75
Cold strip	27.00	29.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	17.00	18.50	21.00	26.00
Plates	20.00	21.50	24.00	29.00
Sheets	25.00	28.00	31.00	35.00
Hot strip	15.75	16.75	21.75	26.75
Cold stp.	20.50	22.00	27.00	35.00

Steel Plates

Pittsburgh	1.80c
New York, del.	2.09c
Philadelphia, del.	1.99c
Boston, delivered	2.22c
Buffalo, delivered	2.05c
Chicago or Gary	1.85c
Cleveland, del.	1.99½c
Birmingham	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific ports, f.o.b. cars, dock	2.35c
St. Louis, delivered	2.08c

Structural Shapes

Pittsburgh	1.80c
Philadelphia, del.	2.01½c
New York, del.	2.06½c
Boston, delivered	2.20½c
Bethlehem	1.90c
Chicago	1.85c
Cleveland, del.	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b. cars, dock	2.35c

Bars

Soft Steel

(Base, 5 to 25 tons)

Pittsburgh	1.85c
Chicago or Gary	1.90c
Duluth	2.00c
Birmingham	2.00c
Cleveland	1.90c
Buffalo	1.95c
Detroit, delivered	2.00c
Pacific ports, f.o.b. cars, dock	2.40c
Philadelphia, del.	2.16c
Boston, delivered	2.27c
New York, del.	2.20c
Pitts., forg. qual.	2.10c

Rail Steel

To Manufacturing Trade

Pittsburgh	1.70c
Chicago or Gary	1.75c
Moline, Ill.	1.75c
Cleveland	1.75c
Buffalo	1.80c

Iron

Troy, N. Y.	1.70c
Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia	2.06c
Pittsburgh, refined	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. cars dock	2.45c
Philadelphia, del.	2.36c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.	1.95c
Gulf ports	2.30c

Wire Products

(Prices apply to straight or mixed carloads; less carloads $4 higher; less carloads fencing $5 over base column.)

Base Pitts.-Cleve. 100 lb. keg.	
Standard wire nails	$2.40
Cement coated nails	2.40
Galvanized nails, 15 gage and coarser	4.40
do. finer than 15 gage	4.90

(Per pound)

Polished staples	3.10c
Galvanized fence staples	3.35c
Barbed wire, galv.	2.80c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$61.00

To Manufacturing Trade

Plain wire, 6-9 gage	2.30c

Anderson, Ind. (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire, Pittsburgh or Cleveland	2.90c

Do., Chicago up $1, Worcester, $2.

Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs and over	1.97½c

Gary, Ind., Cleve., Chi., up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars (Hot)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.45c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.50
4600 0.20 to 0.30 Mo. 1.25-1.75 Ni. 1.05
5100 0.80-1.10 Cr. 0.45
5100 Cr. spring base
6100 bars 1.20
6100 spring 0.70
Cr., Ni., Van. 1.50
Carbon Van. 0.95
9250 carbon base plus extras

Piling

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Strip and Hoops

Hot strip to 23⅛-in. Pittsburgh	1.85c
Chicago or Gary	1.95c
Birmingham base	2.00c
Detroit, delivered	2.05c
Philadelphia, del.	2.16c
New York, del.	2.20c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-strip, Pitts. Cleve.	2.60c
Detroit, del.	2.65c
Worcester, Mass.	2.80c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 20-45 lbs.	$28.00
45-50 lbs.	$25.00
50-60 lbs.	$26.00
70-75 lbs.	$24.50
80-90 lbs.	$26.00
100 lbs.	$27.00
Light rails, billet qual. Pitts., Chi.	$35.00
Do., reroll, qual.	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel	2.10c
Spikes, R. R. base	2.60c
Track bolts, base	3.60c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $2; 16 and 20 lbs., up $1; 12 lbs. up $2; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots, Dec. 1, 1932, lists, 10% extra for less full containers.

Carriage and Machine

½ x 6 and smaller	70-10-5 off
Do. larger	70-10 off
Tire bolts	55 off

Plow Bolts

All sizes	70-10 off

Stove Bolts

In packages with nuts attached 72½-10 off; in packages with nuts separate 72½-10-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	65-5 off
Elevator bolts	65-5 off

Nuts

S. A. E. semifinished hex.; ½ to ⅞-inch	60-20-15 off
Do., ⅛ to 1 inch	60-20-15 off
Do., over 1-inch	60-20-15 off

Hexagon Cap Screws

Milled	80-10-10 off
Upset, 1-in., smaller	85 off

Square Head Set Screws

Upset, 1-in., smaller	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila., to jobbers & large nut, bolt mfrs.	$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. under 5 kegs; no discount on size extras	$3.20

Pipe and Tubing

Base $200 net ton, expect on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ points less. Wrought pipe, Pittsburgh.

Butt Weld

In.	Blk.	Galv.
Steel		
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

Lap Weld

Steel		
2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½

Line Pipe

Steel	
½, butt weld	57½
⅛-inch, butt weld	50½
¼—⅜, butt weld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63
Iron	

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8—12-inch, no extra.

Boiler Tubes

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¼—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

Seamless Boiler Tubes

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots or 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are uoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound. Less-carloads revised as of July 1, 1935, card.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$39.00-40.00
4-in., Birmingham	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago	47.40-48.40
6-in. & over, east. fdy.	43.00
Do., 4-in.	— 46.00

Class A pipe $3 over Class B.

Stnd. fitgs., Birm. base	$100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$29.00
Philadelphia	34.67
Duluth	31.00

Forging Billets

6 x 6 to 9 x 9-in., base

Pitts., Chi., Buff.	35.00
Forging, Duluth	37.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	30.00

Slabs

Pitts., Chi., Cleve., Young	29.00

Wire Rods

(Common; combination up $2)

Pitts., Cleveland	40.00
Chicago	41.00
Worcester, Mass.	42.00

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point	1.80c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.50- 3.65
Connellsville, fdry.	4.00- 4.25
Connel., prem. fdry.	5.50- 5.75
New River fdry.	6.00
Wise county fdry.	4.45- 5.00
Wise county fur.	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.20- 9.65
Chi., ov., outside del.	9.00
Chicago, del.	9.75
New England, del.	11.50
St. Louis, del.	10.00
Birmingham, ovens	6.50
Indianapolis, del.	9.40
Cincinnati, del.	9.50
Cleveland, del.	9.75
Buffalo, ovens	7.50- 8.00
Detroit, ov., out. del.	9.06
Philadelphia, del.	9.03

Coke By-Products

Per gallon, producers' plants.

	Tank lots	Spot
Pure and 90% benzol		18.00c
Toluol		30.00c
Solvent naphtha		30.00c
Commercial xylol		30.00c

Per lb. f.o.b. New York.

Phenol (200 lb. drums)	16.30c
Do. (100 lbs.)	17.30c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls., to jobbers	6.75c

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.20

†Western prices, ½-cent up

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$20 50	$21.00	$20.00	$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.00
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00
Delivered from Basing Points:				
Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm.	22.50	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	†19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	20.58	20.58	20.08	.....
Cincinnati from Birmingham	20 20	.....	19.20	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O.	21.93	21.93	21.43	22.43
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.07	21.07
Muskegon, Mich., from Chicago Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem	21.99	22.49	.....	.....
Philadelphia from Birmingham	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville Island	Neville base plus 67c, 81c and $1.21 switching charges			
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25

Delivered from Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
St. Louis, northern	20.00	20.00	19.50	.....
St. Louis from Birmingham	†19.62	.....	19.50	.....
St. Paul from Duluth	21.94	21.94	.....	22.44

†Over 0.70 phos.

Low Phos

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $24.00, Phila. base, standard and copper bearing, $25.13.

Gray Forge		Charcoal	
Valley furnace	19.00	Lake Superior fur.	$22.00
Pitts. dist. fur.	19.00	Do., del. Chicago	25.25
		Lyles, Tenn.	22.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $22.75; 6.51-7—$23.25; 7-7.50—$23.75; 7.51-8—$24.25; 8-8.50—$24.75; 8.51-9—$25.25; 9-9.50—$25.75. Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon: 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$55.00

First Quality

Pa., Ill., Md., Mo.	$45.00
Alabama, Ga., Ky.	$40.00-45.00

Second Quality

Pa., Ill., Ky., Md., Mo.	40.00
Ga., Ala.	35.00

Ohio

First quality	$40.00
Intermediary	37.00
Second quality	28.00

Malleable Bung Brick

All bases	50.00

Silica Brick

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk)	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$45.00
Chemically bonded chrome brick	45.00
Magnesite brick	65.00
Chemically bonded magnesite brick	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$20.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all-rail	$16.00
*Do., for barge	$17.50

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
Do., Balti. base	85.00
Do., del. Pittsb'gh	90.13
Spiegeleisen, 19-20% dom. Palmerton, Pa., spot†	26.00
Do., New Orleans	26.00
Ferrosilicon, 50% freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicoman., 2½ carb.	90.00
2% carbon, 95.00; 1%, 105.00	
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.	10.00
Ferrotungsten, stand., lb. con. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont.	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $2 unitage	60.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	65.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80
†Carloads, Quan. diff. apply.	

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead: N. Y.	Lead: East St. L.	Zinc: St. L.	Aluminum 99%	Antimony: Chinese Spot, N. Y.	Nickel: Cathodes
Dec. 21	9.25	9.37½	8.85	49.00	47.50	4.50	4.35	4.85	*19.00	14.50	35.00
Dec. 23	9.25	9.37½	8.85	48.75	47.25	4.50	4.35	4.85	*19.00	14.50	35.00
Dec. 24	9.25	9.37½	8.85	48.50	47.12½	4.50	4.35	4.85	*19.00	14.50	35.00
Dec. 25—Holiday.											
Dec. 26	9.25	9.37½	8.85	48.37½	47.12½	4.50	4.35	4.85	*19.00	14.50	35.00
Dec. 27	9.25	9.37½	8.85	48.50	47.25	4.50	4.35	4.85	*19.00	14.50	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper.

Sheets	
Yellow brass (high)	14.62½
Copper hot rolled	16.25
Lead cut to jobbers	8.25
Zinc, 100-lb. base	9.50
Tubes	
High yellow brass	16.62½
Seamless copper	16.75
Rods	
High yelow brass	13.12½
Copper, hot rolled	13.50
Anodes	
Copper untrimmed	14.00
Wire	
Yellow brass (high)	15.12½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	5.75- 6.00
Cleveland	6.50- 6.75
Chicago	6.00- 6.12½
St. Louis	6.00- 6.25
Heavy Copper and Wire	
New York, No. 1	7.00- 7.25
Chicago, No. 1	7.00- 7.25
Cleveland	6.75- 7.00
St. Louis, No. 1	7.00- 7.37½
Composition Brass Borings	
New York	5.00- 5.25
Light Copper	
New York	5.75- 6.00
Chicago	5.50- 5.75
Cleveland	6.00- 6.25
St. Louis	5.75- 6.00
Light Brass	
Chicago	3.37½-3.62½
Cleveland	3.25- 3.50
St. Louis	3.50- 3.75
Lead	
New York	3.50- 3.75
Cleveland	3.50- 3.75
Chicago	3.37½-3.62½
St. Louis	3.65- 3.75
Zinc	
New York	2.00- 2.25
Cleveland	2.50- 2.75
St. Louis	2.75- 3.00
Aluminum	
Borings, Cleveland	9.00- 9.50
Mixed, cast, Cleve.	13.25-13.50
Mixed, cast, St. L.	13.00-13.50
Clips, soft, Cleve.	15.00-15.25

SECONDARY METALS

Brass ingot, 85-5-5-5	9.50
Stand. No. 12 alum.	17.00-17.50

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	8.50- 9.50
Boston, dock, expt.	9.50- 9.75
Boston, domestic	7.00- 7.75
Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Chicago, No. 1	13.00-13.50
Cleveland, No. 1	12.75-13.25
Cleveland, No. 2	11.75-12.25
Detroit, No. 1	10.00-10.50
Detroit, No. 2	8.50- 9.00
Eastern Pa., No. 1	12.00-12.50
Eastern Pa., No. 2	11.00-11.50
Federal, Ill.	10.00-10.50
Granite City, R. R.	10.50-11.00
Granite City, No. 2	9.25- 9.75
N. Y., deal, No. 2	7.50- 8.00
N. Y., deal, barge	8.50- 9.00
Pitts., No. 1 (R. R.)	14.50-15.00
Pitts., No. 1 (dlr.)	14.00-14.50
Pittsburgh, No. 2	13.00-13.50
St. Louis	9.25- 9.75
Valleys, No. 1	13.50-14.00

COMPRESSED SHEETS

Buffalo, dealers	11.00-11.50
Chicago, factory	12.00-12.50
Chicago, dealer	11.00-12.00
Cleveland	12.25-12.75
Detroit	10.00-10.50
E. Pa., new mat.	11.50-12.00
Pittsburgh	14.25-14.75
St. Louis	7.00- 7.50
Valleys	13.00-13.25

BUNDLED SHEETS

Buffalo	9.00- 9.50
Cincinnati, del.	8.00- 8.50
Cleveland	9.75-10.25
Pittsburgh	13.00-13.50
St. Louis	5.50- 6.05

SHEET CLIPPINGS, LOOSE

Chicago	7.50- 8.00
Cincinnati	7.50- 8.00
Detroit	7.50- 8.00
St. Louis	5.00- 5.50

STEEL RAILS, SHORT

Birmingham	12.00-12.50
Buffalo	14.50-15.00
Chicago (3 ft.)	15.00-15.50
Chicago (2 ft.)	15.75-16.25
Cincinnati, del.	14.00-14.50
Detroit	13.50-14.00
Pitts., open-hearth, 3 ft. and less	15.25-15.75
St. Louis, 2 ft. & less	14.00-14.50

STEEL RAILS, SCRAP

Boston	7.50- 7.75
Chicago	13.00-13.25
Pittsburgh	14.50-15.00
St. Louis	11.50-12.00
Buffalo	12.00-12.50

STOVE PLATE

Birmingham	7.00- 7.50
Boston, dealers	4.75- 5.00
Buffalo	10.25-10.75
Chicago	7.00- 7.50
Cincinnati, dealers	7.50- 8.00
Detroit, net	7.00- 7.50
Eastern Pa.	9.50- 9.75
N. Y., deal, fdry	6.25- 6.75
St. Louis	7.00- 7.50

COUPLERS, SPRINGS

Buffalo	14.50-15.00
Chicago, springs	14.00-14.50
Eastern Pa.	15.50-16.00
Pittsburgh	16.00-16.50
St. Louis	12.00-12.50

ANGLE BARS—STEEL

Chicago	14.00-14.50
St. Louis	12.25-12.75

RAILROAD SPECIALTIES

Chicago	14.00-14.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	14.50-15.00
Cleveland, billet, bloom crops	16.00-16.50
Eastern Pa., crops	15.50-16.00
Pittsburgh, billet, bloom crops	17.00-17.50
Pittsburgh, sheet bar crops	15.75 16.25

FROGS, SWITCHES

Chicago	13.00-13.50
St. Louis, cut	11.50-12.00

SHOVELING STEEL

Chicago	13.00-13.50
Federal, Ill.	9.75-10.25
Granite City, Ill.	8.75- 9.25

RAILROAD WROUGHT

Birmingham	7.00- 7.50
Boston, dealers	6.00- 6.50
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	12.00-12.50
Chicago, No. 1, net	10.00-10.50
Chicago No. 2	13.00-13.50
Cincinnati, No. 2	10.50-11.00
Eastern Pa.	12.50-13.00
N. Y., No. 1, deal	9.50-10.00
St. Louis, No. 1	7.75- 8.25
St. Louis, No. 2	10.50-11.00

SPECIFICATION PIPE

Eastern Pa.	10.50
New York, dealers	3.50- 4.00

BUSHELING

Buffalo, No. 1	11.00-11.50
Chicago, No. 1	12.00-12.50
Cinci., No. 1, deal	7.50- 8.00
Cincinnati, No. 2	4.50- 5.00
Cleveland, No. 2	7.50- 8.00
Detroit, No. 1, new	9.50-10.00
Valleys, new, No. 1	12.75-13.00

MACHINE TURNINGS

Birmingham	4.00- 4.50
Boston, dealers	3.50- 3.75
Buffalo	5.75- 6.25
Chicago	7.50- 8.00
Cincinnati, dealers	6.00- 6.50
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
Eastern Pa.	7.50- 8.00
New York, dealers	3.50- 4.00
Pittsburgh	9.75-10.25
St. Louis	3.25- 3.75
Valleys	9.00- 9.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	2.50- 2.75
Buffalo	7.75- 8.25
Cincinnati, dealers	5.50- 6.00
Cleveland	7.50- 8.00
Detroit	5.50- 6.00
Eastern Pa.	6.00- 6.50
New York, dealers	2.00- 2.50
Pittsburgh	8.00- 9.00

CAST IRON BORINGS

Birmingham, plain	4.00- 4.50
Boston, chemical	5.50- 6.50
Boston, dealers	3.25- 3.50
Buffalo	7.75- 8.25
Chicago	6.00- 6.50
Cincinnati, dealers	5.50- 6.00
Cleveland	7.50- 8.00
Detroit	5.50- 6.00
E. Pa., chemical	10.00-12.00
New York, dealers	2.00- 2.50
St. Louis	3.75- 4.25

PIPE AND FLUES

Cincinnati, dealers	7.00- 7.50

RAILROAD GRATE BARS

Buffalo	8.50- 9.00
Chicago, net	7.50- 8.00
Cincinnati	6.00- 6.50
Eastern Pa.	9.50- 9.75
New York, dealers	5.00- 5.25
St. Louis	5.00- 5.50

FORGE FLASHINGS

Boston, dealers	6.50- 6.75
Buffalo	11.00-11.50
Cleveland	11.00-11.50
Detroit	9.00- 9.50
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston, dealers	4.50- 5.00
Chicago, heavy	14.00-14.50
Eastern Pa.	12.25-12.75

ARCH BARS, TRANSOMS

St. Louis	12.25-12.75

AXLE TURNINGS

Boston, dealers	3.75- 4.25
Buffalo	10.50-11.00
Chicago, elec. fur	12.50-13.00
Eastern Pa.	11.00
St. Louis	8.50- 9.00

STEEL CAR AXLES

Birmingham	12.00-12.50
Boston, ship. point	10.50-11.00
Buffalo	14.50-15.00
Chicago, net	14.50-15.00
Eastern Pa.	17.00
St. Louis	12.75-13.25

SHAFTING

Boston, ship point	13.00-13.25
Eastern Pa.	18.50
New York, dealers	13.50-14.00
St. Louis	13.00-13.50

CAR WHEELS

Birmingham	9.00- 9.50
Boston, iron deal	7.00- 7.75
Buffalo, iron	11.00-11.50
Buffalo, steel	14.50-15.00
Chicago, iron	13.00-13.50
Chicago, rolled steel	14.00-14.50
Cincinnati, iron	10.50-11.00
Eastern Pa., iron	13.50
Eastern Pa., steel	15.50-16.00
Pittsburgh, iron	14.00-14.50
Pittsburgh, steel	15.75-16.25
St. Louis, iron	10.25-10.75
St. Louis, steel	12.00-12.50

NO. 1 CAST SCRAP

Birmingham	9.00- 9.50
Boston, No. 1 mach.	9.00- 9.25
Boston, No. 2	8.25- 8.50
Boston, tex. con.	8.50- 9.00
Buffalo, cupola	11.50-12.00
Buffalo, mach.	12.50-13.00
Chicago, agri. net	10.00-10.50
Chicago, auto	11.00-11.50
Chicago, mach. net	12.00-12.50
Chicago, railr'd net	10.50-11.00
Cinci., mach. cup.	10.50-11.00
Cleveland, cupola	12.75-13.25
Detroit, net	11.50-12.00
Eastern Pa., cupola	12.50-13.00
E. Pa., mixed yard	10.50
Pittsburgh, cupola	13.75-14.25
San Francisco, del.	13.50-14.00
Seattle	7.50- 9.00
St. Louis, No. 1	10.75-11.25
St. L., No. 1 mach.	12.50-13.00

HEAVY CAST

Boston, del.	6.75- 7.00
Buffalo, break.	10.25-10.75
Cleveland, break	10.50-11.00
Detroit, No. 1, mach. net	12.00-12.50
Detroit, break.	9.00- 9.50
Detroit, auto net	11.50-12.00
Eastern Pa.	12.00-12.50
N. Y., break, deal	7.50- 8.00
Pittsburgh	12.50-13.00

MALLEABLE

Birmingham, R. R.	11.50-12.50
Boston, consum.	13.50-14.50
Buffalo	14.75-15.25
Chicago, R. R.	15.75-16.25
Cincinnati, agri. del.	11.50-12.00
Cleveland, rail	16.00-16.50
Detroit, auto net	13.00-13.50
Pittsburgh, rail	16.50-17.00
St. Louis, R. R.	13.75-14.25
Eastern Pa., R. R.	15.00-15.50

RAILS FOR ROLLING

5 feet and over

Birmingham	10.50-11.00
Boston, dealers	8.00- 8.50
Buffalo	12.00-12.50
Chicago	14.00-14.50
Eastern Pa.	13.00-14.00
New York, dealer	10.50-11.00
St. Louis	13.50-14.00

LOCOMOTIVE TIRES

Chicago (cut)	14.00-14.50
St. Louis, No. 1	11.75-12.25

LOW PHOS. PUNCHINGS

Buffalo	14.50-15.00
Chicago	15.50-16.00
Eastern Pa.	15.00-15.50
Pittsburgh (heavy)	16.00-16.50
Pittsburgh (light)	15.50 16.00

Iron Ore

Lake Superior Ore

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

Foreign Ore

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.50
No. Afr. low phos.	10.50
Swedish basic, 65%	9.50
Swedish low phos.	10.50
Spanish No. Africa basic, 50 to 60%	10.50
Tungsten, spot sh. ton unit, duty pd.	$15.50-16.00
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	19.25

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots

Caucasian, 52-55%	26.00
So. African, 52%	26.00
So. Afr., 49-51%	24.00
Indian, 58-60%	nominal
Indian, 48-50%	nominal

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	3.00c
Boston††	3.00c
Buffalo	3.00c
Chattanooga	3.36c
Chicago (j)	3.00c
Cincinnati	3.22c
Cleveland	3.00c
Detroit	3.09c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.06c
New Orleans	3.35c
New York‡(d)	3.31c
Pitts. (h)	2.95c-3.10c
Philadelphia*	3.03c
Portland	3.70c
San Francisco	3.50c
Seattle	3.70c
St. Louis	3.25c
St. Paul	3.25c-3.40c
Tulsa	3.25c
IRON BARS	
Portland	3.40c
Chattanooga	3.36c
Baltimore*	3.05c
Chicago	2.75c
Cincinnati	3.22c
New York‡(d)	3.36c
Philadelphia*	2.93c
St. Louis	3.20c
Tulsa	3.25c
REINFORCING BARS	
Buffalo	2.60c
Chattanooga	3.36c
Chicago	2.10c-2.60c
Cleveland (c)	2.10c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.45c
New Orleans	3.50c
Pitts., plain (h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	2.45c
St. Louis	3.25c
Tulsa	3.25c
Young.	2.30c-2.60c
SHAPES	
Baltimore*	3.00c
Boston††	3.19c
Buffalo	3.25c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland	3.31c
Detroit	3.42c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York (d)	3.46c
Philadelphia*	2.98c
Pittsburgh(h)	3.15c
Portland (i)	3.70c
San Francisco	3.50c
Seattle (i)	3.70c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c
PLATES	
Baltimore*	3.00c
Boston††	3.21c
Buffalo	3.37c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland, ¼-in. and over	3.31c
Detroit	3.42c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York (d)	3.40c
Philadelphia*	2.98c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.50c
Seattle	3.55c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c
NO. 10 BLUE	
Baltimore*	3.10c
Boston††	3.30c
Buffalo	3.62c
Chattanooga	3.36c
Chicago	3.05c
Cincinnati	3.22c
Cleveland	3.11c
Det., 8-10 ga.	3.14c
Houston	3.35c
Los Angeles	3.70c
Milwaukee	3.16c
New Orleans	3.55c
New York	3.31c
Portland	3.75c
Philadelphia*	3.08c
Pittsburgh(h)	2.95c
San Francisco	3.60c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.30c
Tulsa	3.70c
NO. 24 BLACK	
Baltimore*†	3.60c
Boston (g)	2.95c
Buffalo	3.25c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati	4.02c
Cleveland	3.91c
Detroit	3.94c
Los Angeles	4.35c
Milwaukee	3.96c
New Orleans	4.50c
New York	3.89c
Philadelphia*†	3.60c
Pitts.** (h)	3.55c
Portland	4.40c
San Francisco	4.25c
Seattle	4.40c
St. Louis	4.10c
St. Paul	3.90c
Tulsa	4.75c
NO. 24 GALV. SHEETS	
Baltimore*†	4.30c
Buffalo	4.00c
Boston (g)	4.65c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.72c
Cleveland	4.61c
Detroit	4.72c
Houston	4.40c
Los Angeles	4.95c
Milwaukee	4.66c
New Orleans	4.95c
New York	4.50c
Philadelphia*†	4.40c
Pitts.** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.65c
St. Paul	4.50c
Tulsa	5.10c
BANDS	
Baltimore*	3.20c
Boston††	3.30c
Buffalo	3.42c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.47c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.39c
Houston	3.25c
Los Angeles	4.10c
Milwaukee	3.41c
New Orleans	3.95c
New York (d)	3.56c
Philadelphia	3.18c
Pittsburgh (h)	3.20c
Portland	4.25c
San Francisco	4.10c
Seattle	4.25c
St. Louis	3.55c
St. Paul	3.55c
Tulsa	3.45c
HOOPS	
Baltimore	2.30c
Boston	4.30c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.47c
Det., No. 14 and lighter	3.39c
Los Angeles	5.85c
Milwaukee	3.41c
New York	3.56c
Philadelphia	3.43c
Pittsburgh (h)	3.70c
Portland	5.60c
San Francisco	6.15c
Seattle	5.60c
St. Louis	3.55c
St. Paul	3.55c
COLD FIN. STEEL	
Baltimore (c)	3.58c
Boston	3.75c
Buffalo (h)	3.40c
Chattanooga*	3.98c
Chicago (h)	3.35c
Cincinnati	3.57c
Cleveland (h)	3.35c
Detroit	3.64c
Los Ang. (f) (d)	5.85c
Milwaukee	3.46c
New Orleans	4.15c
New York	3.81c
Philadelphia	3.61c
Pittsburgh	3.35c
Portland (f) (d)	6.00c
San Fran.(f) (d)	5.80c
Seattle (f) (d)	6.00c
St. Louis	3.60c
St. Paul	3.87c
Tulsa	4.50c
COLD ROLLED STRIP	
Boston, 0.100-in., 500 lb. lots	3.245c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.22c
Cleveland (b)	3.20c
Detroit	3.33c
New York	3.36c
St. Louis	3.45c

TOOLS STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up)

	Base
High speed	57c
High carbon, high chrome	37c
Oil hardening	22c
Special tool	20c
Extra tool	17c
Regular tool	14c

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	70
Cleveland	70
Detroit	70-10
Milwaukee	70
Pittsburgh	70

(a) Under 100 pounds, 65 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Minus quant. diff.; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 inches; (j) shapes other than rounds, flats, fillet angles, 3.15c.

‡Domestic bars; *Plus quan. extras; **Under 25 bundles; *†50 or more bundles; †New extras apply; ††Base 40,000 lbs., extras on less.

Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 9999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Dec. 26

Export Prices f. o. b. Ship at Port of Dispatch—(By Cable or Radio)

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	$15.37 3 2 6	$14.41	1 16 0
Basic bessemer	15.37 3 2 6*	12.95	1 12 0
Hematite, Phos. .03-.05	16.00 3 5 0	.....	.....
SEMIFINISHED STEEL			
Billets	$27.06 5 10 0	$19.02	2 7 0
Wire rods, No .5 gage	41.82 8 10 0	36.44	4 10 0
FINISHED STEEL			
Standard rails	$40.59 8 5 0	$44.53	5 10 0
Merchant bars	1.64c 7 10 0	1.15c to 1.20c	3 2 6 to 3 5 0
Structural shapes	1.64c 7 10 0	1.14c	3 1 6
Plates, †¼ in. or 5 mm.	1.77c 8 1 3	1.56c	4 5 0
Sheets, black, 24 gage or 0.5 mm	2.10c 9 15 0	2.13c	5 16 0††
Sheets, gal., 24 gage, corr.	2.58c 11 15 0	2.19c	6 0 0
Bands and strips	1.86c 8 10 0	1.46c	4 0 0
Plain wire, base	2.03c 9 5 0	1.96c	5 7 6
Galvanized wire, base	2.36c 10 15 0	2.29c to 2.33c	6 5 6 to 6 7 6
Wire nails, base	2.63c 12 0 0	2.11c	5 15 0
Tin plate, box 108 lbs.	$ 4.62 0 18 9	.....	.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese: £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$17.22	3 10 0(a)	$17.13	260	$12.85	385	$25.36	63
Basic bessemer pig iron	17.22	3 10 0(a)	12.52	190	11.83	350	27.97 (b)	69.50
Furnace coke	4.56	0 18 6	6.26	95	3.89	115	7.65	19
Billets	27.06	5 10 0	28.34	430	18.25	540	38.85	96.50
Standard rails	1.81c	8 5 0	2.00c	671	1.65c	1,100	2.42c	132
Merchant bars	1.90c	8 12 0	1.68c	560	.90c	600	2.01c	110
Structural shapes	1.92c	8 15 0	1.65c	550	.90c	600	1.97c	107.50
Plates, †¼-in. or 5 mm.	1.99c	9 1 3	2.10c	700	1.05c	700	2.32c	127
Sheets, black	2.47c	11 5 0§	1.69c	575‡	1.24c	825‡	2.64c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.91c	13 5 0	3.00c	1,000	2.25c	1,500	6.77c	370
Plain wire	2.03c	9 5 0	2.64c	900	1.73c	1,150	3.17c	173
Bands and strips	2.05c	9 7 0	1.95c	650	1.26c	840	2.32c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. a del. Middlesbrough. b hematite. ††Close annealed.

**Gold pound sterling carries a premium of 66.25 per cent over paper sterling.

Bars

Bar Prices, Page 42

Pittsburgh — Buying in both alloy and carbon bar grades was interrupted last week but the market maintained a firm undertone, as bar users as a class agreed on an improving trend in early 1936. Many forging shops, with definite assurances of improving orders over the next 30 days, have been carrying heavier inventories and are motivated by no other reason, as prices are firm finding carbon bars at 1.85c, Pittsburgh, and alloy bars at 2.45c, base, Pittsburgh. Federal engineers at Pittsburgh close bids Dec. 30 on 80 steel eyebars for lock No. 7 repairs, on the Ohio river near Midland, Pa.

Cleveland—Most steel bar consumers have covered for at least part of their first quarter requirements. Although prices were not advanced, there is some opinion that any change in the early months of 1936 will be upward. Specifications from automobile and agricultural implement manufacturers still are heavy.

Chicago—While steel bar specifications were curtailed last week, a prompt recovery in demand is in prospect. Farm implement manufacturers anticipate further improvement next year and are expected to be more active shortly in production of spring tools. Tractor manufacturers hold operations at a peak rate and heavy schedules are in prospect for the near future.

Boston — Some fair first quarter contracting in commercial bars is noted here and with buyers' stocks in a number of instances understood to be rather badly in need of replenishment it is likely that substantial releases will be forthcoming following inventory period.

New York—Commercial steel bar sellers expect improved buying in first quarter. Stocks laid in by buyers before the price adjustment Oct. 1 need replenishment and greater consumption is in prospect.

Philadelphia—Steel bar sellers look for sharp improvement after inventories have been completed and possibility of an advance in prices after the turn of the year is still being discussed.

Cold Finished

Cold Finished Prices, Page 43

Pittsburgh — Routine demand for cold-finished steel bars at a somewhat reduced level owing to the Dec. 25 holiday, was the market highlight last week. This week revised billings go through whereby the f.o.b. Pittsburgh quotation becomes 2.10c, but chemical extras are reduced 15 cents per 100 pounds.

Plates

Plate Prices, Page 42

Pittsburgh — Since the Tri State Transportation Co. order for six barges and the Campbell Transportation Co. order for four, which aggregated over 2100 tons of plates, prospects in the barge market have narrowed considerably. Virtually all of the present inquiry does not appear promising for early award. The Texas Co. plans to move oil products from its refinery in Eastern Texas to Nashville, Tenn. and possibly farther north on the Ohio river in 1936. The barging contract is reported to be of interest to a number of concerns. The tank market is in a similar status and plate mills are considering the Pennsylvania railroad's award of car plates for its 10,000 freight cars the outstanding inquiry in the market at present. Plates hold at 1.80c, Pittsburgh.

Cleveland — Specifications during the week were restricted to a few carloads. Railroads have not yet made commitments for first quarter.

Chicago—Plate demand is fairly steady, being in better volume than earlier in the year. Part of the gain is accounted for by increased operations at railroad and structural shops. Activity in tank work remains rather restricted, one of the largest of recent awards being 2000 tons for a water storage tank at Long Beach, Calif.

Boston—Plate tonnage reflects the year-end letdown, with routine contracting for next quarter a feature. In the absence of anything definite on possible price advances, there is perhaps more quarterly contracting than usual.

Chicago Bridge & Iron Works, Chicago, has been awarded six tanks for the Pan American Petroleum & Transport Co., New York, for Chelsea, Mass.

New York—Plate tonnage is holding up well for this time of year. Principal interest centers about heavy requirements for the International Mercantile Marine-Roosevelt Steamship Co. liner, to be built at Newport News, Va.

Pan-American Refining Corp., Independence, Kans., has awarded the contract to M. W. Kellogg Co., Jersey City, N. J., for a cracking unit at its refinery in Texas City, Tex., which is now under construction by the Foster Wheeler Corp., New York.

Philadelphia—Buying of steel plates is rather spotty but contracting for first quarter is general. Talk is still heard of possible price advances during the first quarter but nothing definite has appeared and opinion is much divided on the prospect.

Seattle—Important tonnages are few but there is fair demand for small jobs. State of Washington has awarded 150 tons for 1937 automobile license plates to Pacific Coast Steel Corp., Seattle.

Contracts Placed

2000 tons, water storage tank, Long Beach, Calif., to Western Pipe & Steel Co. of California, San Francisco.

335 tons, elevated tank, Oshkosh, Wis., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

210 tons, 500,000-gallon municipal elevated tank, Fort Lauderdale, Fla., to Tippett & Wood, Phillipsburg, N. J.

200 tons, for steel barge 34 x 140 x 10-foot tank barge for Ashland Refining Co., Ashland, Ky., to Marietta Mfg. Co., Point Pleasant, W. Va.

150 tons, state of Washington, 1937, automobile license plates, to Pacific Coast Steel Corp., Seattle.

110 tons, filtration plant, Lorton, Va., to Chicago Bridge & Iron Works, Chicago.

Sheets

Sheet Prices, Page 42

Pittsburgh — With moderately heavy backlogs awaiting production, sheet producers took only a few days out at the most last week in observance of the Christmas holiday. However, the interruption coming at midweek was sufficient to curtail operations to about 50-55 per cent, with a leading interest's mills at 52 per cent, this comparing with 70-75 per cent in the mills a week preceding. Buying of sheets appears to be well diversified, although at this time automotive specifications predominate. Pittsburgh base prices remain quotably unchanged, with black sheets 2.40c, f.o.b., Pittsburgh; heavy hot rolled, 1.85c; galvanized, 3.10c; and the cold-rolled grades at 2.95c for No. 20 gage and 2.50c for No. 10 gage.

Cleveland—A strong demand persists for sheets from automobile manufacturers, makers of household utilities and miscellaneous industries. Although price concessions of $3 a ton are reported in the Detroit district, prices here are steady.

Philadelphia—Sheet sellers report the fourth quarter was more active than the third quarter, and anticipate further gains in the next three months.

Leading producers of sheet steel are establishing increased item extras on odd sizes for all products other than electrical grades and formed roofing. These are in addition

to extras on standard sizes which are unchanged. The new extras follow: 25 cents per 100 pounds for lots under 4000 to 2500 pounds; 35 cents under 2500 pounds to 1500 pounds; 50 cents under 1500 pounds to 1000 pounds; 75 cents under 1000 pounds to 500 pounds and $1 under 500 pounds.

In addition to odd sizes the extras are applicable irrespective of size to cold-rolled vitrenamel and long ternes as no standard sizes are set up on these products.

Mills also are reverting immediately to extras on formed roofing which were in effect prior to Aug. 30 this year. These extras are 15 cents per 100 pounds for 50 squares and over but less than carlots and 25 cents for under 50 squares.

Chicago — Sheet mills continue busy despite some seasonal recession lately in orders. Automotive requirements are holding at a high rate, while the letdown in consumption by miscellaneous users has been less than usual. While new business for immediate shipment has shown some decrease, the outlook for January deliveries is favorable. Prices are fairly steady.

Boston—Most leading sheet consumers have entered contracts for next quarter, not only to obtain preferred positions on rolling schedules in some instances, but to forestall the effects of a possible advance in mid-quarter. While adversely affected by the holiday and inventory season, specifications are holding up better than expected.

New York—Sheet sellers anticipate a brisk resumption of business after the holiday and inventory season. Most leading consumers have entered contracts as a protection against a possible advance in the next quarter. Until last week specifications were coming out very well, except from those whose production was primarily for the holiday trade.

Buffalo—Seneca Iron & Steel Co.'s plant here is operating at 90 per cent following a 24-hour shutdown for the holiday. Production generally is expected to continue at this rate until Bethlehem Steel Co.'s sheet mill at Lackawanna (Buffalo) goes into operation. The date for this is still uncertain but is thought to be near so far as the hot mill is concerned. Liberal first quarter bookings are already in hand with more in prospect.

Cincinnati—Sheet mills have substantial backlogs, giving promise that post-holiday production will be near November and December levels. Demand for full finished sheets has been especially active. Bookings for January indicate sustained broad requirements.

St. Louis—Distributors and producers in this area report a recession in activities, due mainly to seasonal influences. December shipments, according to preliminary reports, will represent the largest total for the month since 1930.

Birmingham, Ala.—Having made a remarkable run through the year sheet mills here are assured of activity for an almost indefinite period in the future. Delivery eased off for the holiday, but a strong demand is apparent.

Transportation

Track Material Prices, Page 43

Railroad repair shops continue busy, stimulated by recent gains in freight car traffic and prospects for the need of additional rolling equipment early next year. Steel demand for repair purposes is in the best volume this year and fairly heavy requirements are expected to continue into first quarter. Developments are lacking in new equipment buying, but moderate purchases are in prospect from several roads.

Rail orders include 10,000 tons from the Wabash, while another western road shortly is expected to place 9000 tons. Rail mill operations continue on a restricted basis.

First steel specifications for the construction of 10,000 freight cars by the Pennsylvania railroad have been issued over the past week. Although small, they indicate the beginning of the car-building program and the fact that heavier specifications are near, against the aggregate of 115,000 tons to be required.

New York Central has applied to PWA for a loan of $2,593,000 for the purchase of 35,000 tons of new rails and other track materials.

Louisville & Nashville shops at Birmingham, Ala., will resume at full force Jan. 2, after a holiday shutdown. A large program of repairs, especially to coal cars, is being carried on.

Delaware, Lackawanna & Western will open bids Dec. 30 on freight car axles for first half delivery.

Car Orders Placed

Tata Iron & Steel Co., India, three 50-ton ore cars, to Magor Car Corp., New York.

United States Sugar Corp., ten 30-ton cane cars, to Magor Car Corp., New York.

Buses Booked

Twin Coach Corp., Kent, O.: Six 31-passenger for Honolulu Rapid Transit Co., Honolulu, T. H.; nine 30-passenger and four 40-passenger for Los Angeles Railway Corp., Los Angeles; five 23-passenger for city of Coral Gables, Fla.; four 23-passenger for Lincoln Traction Co., Lincoln, Nebr.; four 23-passenger for San Jose Railroad Co., San Jose, Calif.; four 30-passenger for Jamaica Buses Inc., Jamaica, L. I., N. Y.; four 30-passenger for East Bay Street Railway Co., Oakland, Calif.; three 23-passenger for Tri-City Railway of Illinois, Davenport, Iowa; three 23-passenger and three 30-passenger for Northern Texas Traction Co., Fort Worth, Tex.; three 23-passenger for Wisconsin Power & Light Co., Fond du Lac, Wis.

American Car & Foundry Motors Co., New York: Three 32-passenger for Interstate Transit Co., Attleboro, Mass.; three 32-passenger for Mastco Co. Inc., New Britain, Conn.

Rail Orders Placed

Wabash, 10,000 tons, divided among Bethlehem Steel Co., Bethlehem, Pa., Carnegie-Illinois Steel Corp., Pittsburgh, and Inland Steel Co., Chicago.

Car Orders Pending

Baltimore Transit Co., Baltimore, 25 trolley cars, bids asked.

Pipe

Pipe Prices, Page 43

Pittsburgh—Jobbers of tubular products appear to be more interested in stocking requirements, in view of a heavy expansion anticipated in building programs in 1936. Absence of large line pipe tonnage is still keenly felt, and buying continues to run to small-sized lots. Later this week, producers will begin to apply the $2 a ton increase in skelp.

Chicago—December has proved the most active month of the year in cast pipe sales, and the volume of pending work points to favorable prospects for the next several weeks. Releases are not expected to be received on a large portion of recent WPA business until next quarter, giving producers fair backlogs for several months. Prices are steady, with no early changes indicated.

New York—Cast pipe shops report a substantial improvement this month, largely as a result of the number of public financed projects which came up for bidding. Locally, there have been few outstanding tonnages, yet a fair number of small jobs have come out through the local procurement officer of the treasury department and other public agencies.

Seattle—Inquiry continues active, but red tape is causing delay in final awards in some instances. Considerable tonnage is about to be placed in the Pacific northwest. Rainier, Oreg., will ask bids shortly for a gravity pipeline, with plans by Stevens & Koon, Portland, Oreg. Glasgow, Mont., has approval a $32,000 bond issue for system improvements. McCammon, Idaho, opened

bids Dec. 28 for 25,000 feet of 6 and 8-inch, with accessories.

Cast Pipe Pending

400 tons, sewage system, La Crosse, Wis.

Strip Steel

Strip Prices, Page 43

Pittsburgh — By late last week strip mill operations had resumed to a level of about 60 per cent of capacity, following a one-day shutdown Dec. 25. Operations may tend to be slightly irregular again this week, but a fairly heavy backlog of orders for January shipment assures producers of steady production for at least 30 days. The market is quoted unchanged at 1.85c, Pittsburgh, on hot strip and 2.60c, Pittsburgh or Cleveland, for cold strip.

Cleveland—Specifications for hot and cold-rolled strip last week showed less than the usual seasonal decline. A good volume of releases were received late in the week. Mill operations have rebounded to their former level, and producers generally have backlogs for several weeks.

Chicago—Strip demand is expected to recover promptly from the moderate lull experienced recently. Shipments were affected by holiday influences, but interruption to operations among most consumers was brief. Inventory-taking also has had only a small restricting effect on strip shipments. Requirements of the automotive industry show little change, being unusually heavy for this period.

New York — First quarter contracting for strip is going forward, with current specifications off, in view of the holiday and inventory season. Some trade interests believe that tonnage next quarter may fall short of the current period as a number of consumers who have been busy preparing for holiday trade will experience off-season dullness. Further, automotive accessory demand may not show the relative increase of other years, because of the early introduction of new models.

Wire

Wire Prices, Page 43

Pittsburgh — Consumer demand for manufacturing wire items, such as plain and spring wire, and rods, continues to be the market's highlight. In keeping with the season, merchant wire products are undergoing little comparative activity and the market centers around commitments of bolt and nut makers, spring manufacturers and the automotive trade. Pittsburgh base price on nails holds at $2.40 per keg, plain wire at 2.30c and on spring wire at 2.90c. The new asking price on woven wire fencing is $61 per base column for carload lots.

Cleveland — Manufacturers and jobbers have made substantial commitments for first quarter, and except for the holiday last week specifications held closely to recent averages. Leading interests are firm on the $2 a ton advance for wire rods, and consumers have made tentative commitments for first quarter at $40, base, Cleveland, for common rods. One small producer outside this district, however, is reported to be offering rods at $38 for first quarter.

Chicago—Wire demand last week was affected by the holiday period, but December as a whole has shown less than the usual recession. Activity in the automotive industry has been an important factor in sustaining shipments of manufacturers' wire, though miscellaneous consumers have maintained fairly steady operations. Jobbers have only moderate stocks of merchant products and are expected to increase supplies. Prices are steady on all products.

Semifinished

Semifinished Prices, Page 43

The $2 a ton higher asking price on sheet bars, rerolling billets, slabs and wire rods still is being firmly held by producers, but they are accepting specifications at the lower fourth-quarter market until Dec. 31 for shipment through January. Consequently, bookings have been heavy and will be so the first two days of this week, but shipments will not be unduly large until January. Producers quote the following base prices, f.o.b., Pittsburgh: Sheet bars, $30, rerolling billets, $29, common wire rods, $40 per ton, and skelp, 1.80c per pound.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 43

First quarter contracting for bolts and nuts is slow. The advance over fourth quarter apparently is delaying buying, though a number of contracts have been entered. While specifications have been in fair volume there is only a moderate tendency to speculate.

Absence of more extensive coverage at Chicago is attributed to consistent weakness in bolt and nut prices for several years and failure of several previous advances to hold. The outlook for increased consumption of bolts, nuts and rivets is favorable, particularly in the farm implement and railroad industries.

At Cleveland, heavy specifications are being received from automobile manufacturers, with railroads second. Releases increased immediately after Christmas.

Shapes

Structural Shape Prices, Page 42

Pittsburgh—Last week Bethlehem Fabricators Inc., Bethlehem, Pa., closed on contracts for a 2540-ton hospital building in New York, and an 1180-ton viaduct in New York. Another outstanding order was 1100 tons for the United States Pipe & Foundry Co. plant at Chattanooga, Tenn., which was divided equally between Virginia Bridge & Iron Co., and Converse Bridge & Steel Co. Shapes hold at 1.80c, Pittsburgh.

Cleveland—General contracts have been awarded, and 700 to 800 tons of shapes are expected to be placed shortly, for nine Cleveland school buildings. The number was reduced from 12 as originally proposed when bids exceeded estimates. Cuyahoga (Cleveland) county commissioners are again seeking federal funds, which were refused two years ago, for building the Main street bridge, requiring 5000 to 6000 tons of shapes. Small projects, both public and private are fairly numerous.

Chicago—Structural inquiries consist almost wholly of bridges. Illinois takes bids Jan. 3 on two subways in Chicago and Evanston involving 1580 tons. Inquiries on additional work of this type are to be issued shortly in order to hasten the state's program sponsored by the federal work relief. American Bridge Co. is low on the grade crossing elimination on Cermak road here requiring 1000 tons of shapes.

New York — While substantial structural tonnage is pending, fabricators report awards as relatively light. The great bulk of inquiries is for public projects.

Philadelphia — Structural awards

Shape Awards Compared

	Tons
Week ended Dec. 28	17,295
Week ended Dec. 21	25,584
Week ended Dec. 14	26,936
This week, 1934	7,855
Weekly average, 1934	16,284
Weekly average, 1935	17,081
Weekly average, November	18,743
Total to date, 1934	863,078
Total to date, 1935	905,309

have increased, with 1500 tons placed with McClintic-Marshall Corp., Bethlehem, Pa., for Ponsol color unit No. 1 of E. I. DuPont de Nemours & Co. Inc., Wilmington, Del., at Carney's Point, Pa. The DuPont company has 1800 tons pending for a plant at Richmond, Va. Most of pending school work is not expected to be placed until after Jan. 1.

Seattle—Tonnages pending are substantial, although the week's awards were unimportant. Many general contracts have been awarded and fabricators are expecting sub-lettings before the end of the month. More than 1000 tons are up for immediate action, including 315 tons for the Dravus street bridge, Seattle, D. Nygren, Seattle, general contractor.

Shape Contracts Placed

2540 tons, building for Bellevue hospital, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.

1500 tons for Ponsol color unit No. 1 of E. I. duPont de Nemours & Co. Inc., Wilmington, Del., to McClintic-Marshall Corp., Bethlehem, Pa.

1460 tons, municipal bridge, Chelsea street, Boston, to McClintic-Marshall Corp., Bethlehem, Pa.

1180 tons, West Bedford Parkway boulevard viaduct, New York, to Bethlehem Fabricators, Inc., Bethlehem, Pa.

1100 tons, buildings, Chattanooga, Tenn., for United States Pipe & Foundry Co.; 550 tons to Virginia Bridge & Iron Co., Roanoke, Va., and 550 tons to Converse Bridge & Steel Co., Chattanooga, Tenn.

920 tons, plant building, Ludlow Mfg. Co., Edge Moor, Del., to Roy A. Robinson, Philadelphia. This was reported last week as involving unstated tonnage.

890 tons, New York state highway bridge, NRH RC-3694, Rensselaer county, to Phoenix Bridge Works, Phoenixville, Pa.

870 tons, school No. 166, New York, to Harris Structural Steel Co., New York.

820 tons, highway bridges, Nebraska, to McClintic-Marshall Corp., Bethlehem, Pa.

600 tons, ore dock extension, Two Harbors, Minn., to American Bridge Co., Pittsburgh.

470 tons, Rhode Island school of design building, Providence, R. I., to J. H. Tower Iron Works, Providence, R. I.

425 tons, grade separation, Hand Station, Mich., to R. C. Mahon Co., Detroit.

380 tons, sub-structure work for Emsworth dam near Pittsburgh, to American Bridge Co., Pittsburgh, through Seeds & Derham, Philadelphia.

325 tons, Emsworth lock and dam in Pennsylvania, to American Bridge Co., Pittsburgh.

310 tons, state highway bridge, Newburyport, Mass., to Boston Bridge Works, Cambridge, Mass.

290 tons, state highway bridge, PWMS-8482, Greene county, New York, to McClintic-Marshall Corp., Bethlehem, Pa.

260 tons, health center, St. George, Staten Island, New York, to Joseph T. Ryerson & Son Inc., Chicago.

250 tons, dye house, Amcelle, Md., for Celanese Corp., New York, to Guibert Steel Co., Pittsburgh.

225 tons, medical building, Jamestown, N. Dak., to Crown Iron Works Co., Minneapolis.

210 tons, postoffice and court house, St. Augustine, Fla., to the Bristol Steel & Iron Co., Bristol, Va.

210 tons, nurses home, Westfield, Mass., to the Haarmann Steel Co., Holyoke, Mass.

210 tons, state bridge WPGS-556, Winnebago county, Wisconsin, to the Fort Pitt Bridge Co., Pittsburgh.

200 tons, bridge, WPH 146, Nelson county, North Dakota, to Illinois State Bridge Co., Jacksonville, Ill.

200 tons, procurement division of the treasury department, piling, Orchard beach, Bronx, N. Y., to Belmont Iron Works, Eddystone, Pa.

190 tons, postoffice, St. Augustine, Fla., to Bristol Steel & Iron Works, Bristol, Va.

160 tons, alterations to building No. 10, navy yard, Brooklyn, N. Y., to Frank M. Weaver, Lansdale, Pa.

140 tons, bridge, Malden, Mass., to New England Structural Co., Boston.

135 tons, postoffice, Marquette, Mich., to Hansell-Elcock Co., Chicago.

135 tons, post office Dublin, Ga., to Johnson City Foundry & Machine Co., Johnson City, Tenn.

130 tons, experimental station for the bureau of mines at College Park, Md., to Barber & Ross Inc., Washington.

130 tons, gymnasium and assembly, Fort McClellan, Ala., to Ingalls Iron Works Co., Birmingham, Ala.

115 tons, Sandusky county courthouse, Fremont, O., to the Klein Structural Steel Works, Bellevue, O.

105 tons, tunnel approach, George Washington bridge, New York, to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, Williamsburg bridge repairs, New York, to Vulcan Rail & Construction Co., Maspeth, N. Y.

100 tons, state overpass, Skagit county, Washington, to Steel Fabricators Inc., Seattle.

Shape Contracts Pending

2000 tons, city hall and court house, Nashville, Tenn.

1800 tons, plant at Richmond, Va., for E. I. duPont de Nemours & Co. Inc., Wilmington, Del.

1200 tons, subway, Ninety-fifth street and Stony Island avenue, Chicago; bids at Springfield, Ill., June 3.

1000 tons, parcel post building, Houston, Tex.

1000 tons, grade separation, Cermak road, Chicago; American Bridge Co., Pittsburgh, low.

900 tons, bridge, Okmulgee, Okla.

800 tons, bridge, Louisville, Ky.

775 tons, bridge, Liana, Tex.

675 tons, bridge, Oklahoma City, Okla.

510 tons, Henry Hudson parkway bridge approach, New York.

500 tons, bridge, Seattle, Wash.

500 tons, bridge, Felton, Calif.

380 tons, subway, Railroad avenue, Evanston, Ill.; bids at Springfield, Ill., Jan. 3.

315 tons, Dravus street state bridge, Seattle; D. Nygren, Seattle, general contractor.

300 tons, city hospital, Oneida, N. Y.

300 tons, office, National Marine Fire Insurance Co., 23 Cliff street, New York.

300 tons (also 61 tons reinforcing) state underpass, Pierce county, Washington.; Malcolm & Bell, Portland, Oreg., general contractor.

278 tons, state bridge, Grant county, Washington; D. Nygren, Seattle, general contractor.

270 tons, state highway bridge, Ferguson, Mo.

210 tons, bridge, Manhattan, Kans., for Chicago, Rock Island & Pacific railroad.

200 tons, armory, Rockford, Ill.; A. C. Woods & Co., Rockford, low.

131 tons (including 41 tons reinforcing) Roza reclamation project, Washington, Morrison-Knudson Co., Boise, Idaho, general contractor.

113 tons, through truss bridge, Westfield township, Tioga county; bids to state highway department, Harrisburg, Pa., Jan. 10; included 51,879 pounds of plain steel bars.

Unstated, 280 foot state span, Skamania county, Washington; Puget Sound Bridge & Dredging Co., Seattle, general contractor.

Reinforcing

Reinforcing Bar Prices, Page 43

Pittsburgh — Pennsylvania state highway department will take bids Jan. 3 on small lots of reinforcing bars. The market is generally quoted on the basis of 2.05c, Pittsburgh, or 2.10c, all other mid-western basing points, including Youngstown, O., Cleveland, Buffalo, and Chicago.

Boston — Reinforcing bar sellers are looking forward to a brisk first quarter. Numerous projects have come out, principally public works projects, and many of these will develop into steel orders after the first of the year.

Philadelphia—An award of 570 tons axle steel bars for a housing development in Atlantic City features the reinforcing bar market. Also 500 tons have been placed for the Archives building in Washington. The market for smaller tonnages is fairly active.

Chicago—Pending business in concrete bars is accumulating as a result of recent activity in public works construction, and fairly heavy orders are to be placed soon. While most inquiries lately have been for public projects, plans are due shortly for several large private jobs. For

Concrete Awards Compared

	Tons
Week ended Dec. 28	3,965
Week ended Dec. 21	19,803
Week ended Dec. 14	3,265
This week, 1934	2,624
Weekly average, 1934	4,084
Weekly average, 1935	6,862
Weekly average, November	7,369
Total to date, 1934	216,455
Total to date, 1935	363,708

a dock for the outer drive link here. 700 tons of bars will be required. Most orders taken the past week were small. Prices on fabricated work continue weak.

Seattle—Awards last week exceeded 2000 tons, and considerable business still is pending, much of it for schools and miscellaneous buildings aided by federal funds. Eastern interests were successful in obtaining important tonnages. Truscon Steel Co., Youngstown, O., has booked 600 tons for the Spokane power house, 300 tons for two state buildings at Medical Lake, 110 tons for the Cheney normal school, and 461 tons in six Washington state building projects.

Reinforcing Steel Awards

600 tons, Spokane powerhouse, to Truscon Steel Co., Youngstown, O.

570 tons, housing development, Atlantic City, N. J., to Concrete Steel Co., New York, by John McShain, Philadelphia.

500 tons, Archives building, Washington, through John McCloskey & Son, Philadelphia, to American Steel Engineering Co., Philadelphia.

450 tons, miscellaneous state of Washington schools and other buildings, to Truscon Steel Co., Youngstown, O.

440 tons, Kentucky state highway department underpass, in Campbell county, to Jones & Laughlin Steel Corp., Pittsburgh.

380 tons, Schmitz park bridge, Seattle, to Pacific Coast Steel Corp., Seattle.

300 tons, two buildings at Medical Lake, Wash., state hospital, to Truscon Steel Co., Youngstown, O.

200 tons, miscellaneous school construction, Washington, to Pacific Coast Steel Corp., Seattle.

165 tons, bridge, Blair, Huntington county, Pennsylvania, to Taylor Davis Inc., Philadelphia.

150 tons, Chicago housing project, to Truscon Steel Co., Youngstown, O.

110 tons, Cheney, Wash., normal school addition to Truscon Steel Co., Youngstown, O.

100 tons, sewage work, Elmira, N. Y., to Taylor Davis Inc., Philadelphia.

Reinforcing Steel Pending

700 tons, dock, outer drive bridge link Chicago; Great Lakes Dredge & Dock Co., Chicago, general contractor.

150 tons, state overpass, Latah county, Idaho; H. C. Malott, Seattle, general contractor.

142 tons (including 33 tons shapes) county bridge, Pierce county, Washington; S. R. Gray, Puyallup, Wash., low.

100 tons or more, state viaduct, Kootenai county, Idaho; Interstate Engineering & Construction Co., Newport, Wash., general contractor.

Unstated, 270 foot fish ladder at Rock Island, Wash.; plans in preparation by Puget Sound Power & Light Co., Seattle.

Carpenter Metal Products Co., Cleveland, has sold the metal partition part of its business to Snead & Co., Jersey City, N. J., but will continue to manufacture its line of metal specialties and athletic goods, made of alloy aluminum.

Pig Iron

Pig Iron Prices, Page 44

Pittsburgh—Shipments were interrupted only slightly last week, as most important users were either stocked heavily or entered specifications before Jan. 1. No outstanding inquiries are evident, but specifications by nonintegrated mills against blanket contracts are in sizable quantity. Davison Coke & Iron Co.'s Neville Island, Pa., stack and Shenango Furnace Co.'s Sharpsville, Pa., furnace continue to be the only merchant stacks on but Jones & Laughlin Steel Corp. has one steelworks furnace on merchant grades, and Carnegie-Illinois Steel Corp. has three on various merchant grades.

Cleveland — Most contracts for merchant pig iron for fourth quarter will be completed by Jan. 1, as shipments have continued heavy. Contracting for first quarter is light. National Tube Co., Lorain, O., last week blew out one blast furnace, operating two.

Chicago—New business is limited to small lots, generally coming from foundries which failed to anticipate requirements of the early part of next quarter. Most interests are not expected to re-enter the market on any extensive scale until the latter part of January. Most speculative iron has been shipped though completion of delivery of such purchases is not expected before January. Foundry operations were restricted last week, though the holiday interruption was brief.

Boston—While new business is light, with the holiday and inventory season at hand, shipments against old contracts continue heavy. Much of this tonnage is in excess of immediate needs, and consequently sellers are looking for a continued quiet market over the next few weeks. Sellers claim there will not be much unspecified tonnage by Dec. 31 against existing contracts.

New York—Seasonal influences dominate the market. Shipments against contracts made at old prices continue good, but new orders are spotty, and in view of the fact that present deliveries are in excess of current requirements, it will probably be a few weeks before new buying takes hold. The Troy, N. Y., stack was blown out recently; through typographical error this furnace was reported last week as having been blown in.

Buffalo—Sales show the usual year-end slackening. Eight furnaces continue active. Steelworks are using greater quantities of pig iron in open hearths, and thus are reducing competition with the merchant trade. An active first quarter is indicated.

Philadelphia—Only a moderate tonnage will remain unspecified at the year end against old contracts, and the disposition is to allow some extension of time in such cases.

Cincinnati—The market continues to reflect the purchasing prior to Nov. 1, shipments being heavy, with some speculative tonnage moving, and current sales dull. There is a question as to whether furnace interests will apply the advance on tonnage under contract and not moved by Dec. 31. New business is taking the higher price. Prospects for a fairly active market in the next six weeks are good despite the carryover.

St. Louis—Shipments continue at a high rate, and will doubtless continue so to Dec. 31. Buyers and sellers are anxious to clean up all contracts let prior to the advance of $1 per ton. The melt is holding up well for this time of year. Foundries, making automotive castings, report specifications on a liberal scale, and new business above expectations.

Birmingham, Ala.—Shipments are recovering rapidly after the holiday, and will be steady for an indefinite period. Sales have been made which assure active operation of blast furnaces through the first quarter of 1936. Surplus stock is being resorted to in filling orders. Large melters have but small quantities of iron on yards for the turn of the year.

Metallurgical Coke

Coke Prices, Page 43

Cold weather over the eastern part of the country the past week is of indirect benefit to the coke and coal industries in western Pennsylvania. Shipments have been brisk the past week to ten days and coke producers may soon expect an improvement in buying by distributors. Western Pennsylvania coke industry observed Dec. 25 as a layoff, but in spite of the mid-week interruption, coke-oven schedules were not materially affected. Prices on beehive coke are on a fairly firm basis and the range on standard furnace grade continues $3.50 to $3.75, with a number of small orders being placed at the maximum. The common foundry coke market is unchanged at $4 a ton and premium foundry continues to be $5.50 to $5.75.

By-product coke producers in the Birmingham district are maintaining steady output and demand is sufficient to assure steady operation. The base price of $6.50, ovens, is firm.

Foundry coke shipments have increased slightly at Chicago, contrary to the usual trend, and December de-

liveries are expected to equal or slightly exceed the November movement. Foundry operations are well maintained, with improvement expected early in January. The contract market for by-product foundry coke is expected to be continued into January at $9, ovens, for outside delivery and $9.75, delivered Chicago.

Scrap

Scrap Prices, Page 45

Pittsburgh — In a week when shipping embargoes might be expected to be frequent, only one district mill stopped incoming scrap, issuing an embargo for effect until Jan. 6. With other shipping points open, brokers freely offered $14 a ton for coverage against recent orders, regardless of whether their sales price had been lower, and a firm attitude favoring higher prices was consistent regarding the new year's outlook. For Pittsburgh district shipment, No. 1 heavy melting steel remains quoted $14 to $14.50, hydraulic compressed sheet scrap, $14.25 to $14.75, machine shop turnings, $9.75 to $10.25, railway steel specialties, $15.75 to $16.25, and blast furnace scrap, $8 to $9. Barged scrap from southern points is still moving into this district.

Cleveland—Quiet prevails in the steel and iron scrap market as the year ends but the situation is strong and buying seems certain to bring higher prices. Melt by mills and foundries is heavy and stocks will need replenishing within a reasonable time. Prices are unchanged but strong, no test having been imposed recently.

Chicago—Scrap is marking time and the trade looks for a quiet market for at least another week. Shipments to mills against orders recently have been restricted by curtailed operations, but are expected to increase next month. Prices remain steady and there is no surplus. Dealers generally are paying around $13.25 for No. 1 heavy melting steel. No. 1 busheling is up 50 cents, with other quotations unchanged.

Boston—Dealers have advanced buying prices on forge flashings and skeleton scrap from $6.50 to $6.75 and machine shop turning from $3.50 to $3.75. The general tone is strong, with higher prices likely after the turn of the year.

New York—Dealers in steel and iron scrap report prices steady and unchanged with little mill activity expected until after inventory time. The trade here is inclined to discredit reports Italy is negotiating with Japan for tonnage the latter had covered in this country but for which it is said Japan has no immediate need.

Philadelphia—Prices of steel and iron scrap are unchanged and colder weather and snows add to strength as deliveries are more difficult. A consumer at Harrisburg, Pa., has resumed taking shipments of steel scrap. A report is current here that Japan has contracted for more scrap in this country than it requires and is negotiating with Italy for diversion of its excess tonnage. England is bidding more actively for scrap in this country. A ship due at Philadelphia to load scrap for Italy is still being delayed.

Buffalo—A Buffalo melter is reported to have purchased 10,000 tons of No. 2 heavy melting steel at $11.50, which is up 75 cents a ton from the price paid by the same consumer about a month ago. This is the largest single tonnage sold this quarter to a Buffalo consumer and represents a total advance of $2 a ton in the period. Most dealers now ask a minimum of $12.50 for No. 1 heavy melting steel for which no bid has as yet appeared. Some have even higher ideas. Malleable has been bringing $15 or more for local delivery. An active market is in prospect.

Detroit—Scrap is strong and January is expected to give further improvement in process. Quotations are firm and without change except a 50 cent advance on No. 1 heavy melting steel.

Cincinnati—The iron and steel scrap market is strong although mills are not placing fresh commitments. Dealers expect renewed activity with the new year and retain their bullish sentiment. Recent railroad offerings attracted bids on a level with the preceding month.

St. Louis—While shipments of iron and steel scrap are well sustained, new buying is at a standstill. Prices are steady, though it is easier to buy most grades than a fortnight ago.

Birmingham, Ala.—Purchases by consumers continue in small quantities and the market is considered quiet. While stocks with dealers are fairly good, a large supply is not available.

Seattle—The market is unchanged, with some domestic buying. Japan's ideas of price are out of line and exporting houses expect no new business from the Orient for at least a month. In the meantime stocks at tidewater are not excessive and prices are nominally unchanged.

Ducommun Corp., Los Angeles, distributor of tools, metals, mill supplies, pipes and fittings, will change its name to Ducommun Metals & Supply Co., effective Jan. 2. The change is due to expansion in its lines, and to make the name more indicative of the type of business in which it is engaged. No change in management or personnel is anticipated.

Warehouse

Warehouse Prices, Page 46

Pittsburgh—The base price of cold-drawn bars will be advanced 15c per 100 pounds here, effective Jan. 1, making the new price 3.35c, base, for both city and country shipment.

Chicago—December had somewhat less than its usual recession. For the year as a whole a gain of around 20 per cent over 1934 is indicated.

Boston—An adjustment in cold finished bar prices, to conform with changes announced by the mills, is expected soon.

New York—The rate of new business has been fully comparable with that of November. While there may be some minor adjustments in cold finished bars to conform with certain changes in mill schedules, the base price of 3.81c, will not be changed Jan. 1, according to reliable sources.

Philadelphia—Demand is holding up exceptionaly well with a gain generally shown for the year. Sellers of hot-rolled products report an increase of 5 to 10 per cent in volume of sales, and specialty houses 10 to 20 per cent. Jobbers will advance cold finished bars $3 per ton Jan. 1.

Detroit—Steel sales were ahead of the same week in 1934 by a wide margin. Prices are unchanged and the only revisions are those on bolts, nuts and nails.

St. Louis—Intimation that prices will be advanced during the first quarter of 1935 has served to moderately stimulate business. Buying from the mills is chiefly on a necessity basis, despite the talk of advanced prices.

Cincinnati—Sales show unusual resistance to year-end influences. Volume for the year is about 15 per cent heavier than for 1934 despite prolonged dullness in building materials. The trade is being advised of a $3 ton advance on cold-drawn bars effective Jan. 1.

Ferroalloys

Ferroalloy Prices, Page 44

New York—Most consumers of ferromanganese have entered first quarter contracts at $75, duty paid, Atlantic seaboard, which becomes effective Jan. 1. As previously noted, this is a reduction of $10 a ton. Contracts for domestic spiegeleisen, 19 to 21 per cent, are being renewed at $26, Palmerton, Pa., up to 50 tons.

Steel in Europe

Foreign Steel Prices, Page 46

London (*By Radio*)—The general outlook for steel and iron in Great Britain is good. Prices of plain and galvanized sheets have been advanced 5s a ton. Quiet prevails in pig iron buying but furnaces have excellent commitments for a considerable period and additional stacks are expected to be blown in early in the new year.

Steel markets continue active, all departments participating. Shortage of semifinished steel still is felt and a further increase in the import quota is possible.

The Continent reports export markets quiet, with works generally well booked and the outlook fairly good.

Tin Plate

Tin Plate Prices, Page 42

Pittsburgh—Tin plate mill operations last week at 40 per cent compared with 80 per cent two weeks ago, many producers operating only Dec. 23 and 24 and closing the balance of the week. During this week operations also will be slow, and not until next week will there be a clear-cut production trend in evidence. The fact that heavy stocks of plate are continuing in the hands of producers is working against the hope of any unusually high rate of activity in January. However, a brisk demand for general-line cans might change this situation as most of the tin plate awaiting shipment in the hands of producers is in sizes and weights for packers' cans. Favorable reports on the Pacific Coast salmon pack continue to be heard, with inventories down almost 25 per cent from the level of a year ago, and consumption improving. Tin plate holds at $5.25 per base box.

Nonferrous Metals

Nonferrous Metal Prices, Page 44

New York — Major nonferrous metal markets were quieter last week due to the holidays but domestic prices, except in the case of tin, silver and antimony, held steady.

Copper—Sales declined from the preceding week's average rate but sales for the month to date have totaled more than during all of November. The market is in a favorable position for New Year developments and leaders in the industry consider the outlook for copper in 1936 as promising. All producers quoted electrolytic at 9.25c, Connecticut.

Zinc—Remarkable price steadiness ruled in the prime western zinc market with daily business light and confined to regular customer inquiry for first quarter needs. Shipments to consumers and consumption are holding at an active rate. Prime western zinc held unchanged at 4.85c, East St. Louis.

Lead—New demand for lead slackened further but the price tone held firm at 4.35c, East St. Louis.

Tin—Straits tin prices declined further to around 48.50c in a dull domestic market. Sellers look for renewed buying from plate makers early in January.

Antimony — American antimony prices dropped ½-cent Friday to 13.25c on spot on advices of a weaker market in China. Chinese spot held nominally unchanged here at 14.50c, duty paid New York.

Silver—The position in silver improved Friday and all offerings were taken and prices advanced for the first time since Dec. 9. London bars closed at 21d per ounce while foreign metal in the domestic market closed 49.75c per ounce.

Quicksilver

New York—Quicksilver prices are firm. Some sellers are obtaining higher prices because of scarcity of supplies, but small lot business has been done at $75.50 a flask. Quotations range from $75 to $77, depending on quantity.

Safety

A DRIVE on all metal industries to enlist their support of safety work, especially in small plants where accident frequency rates are rising, will be undertaken by the metals section of the National Safety council in 1936. This program was decided upon at a meeting of the executive committee and members of the metals section in Pittsburgh recently.

Executives will be asked to become more interested in safety activity and to give their full support to the movement. New safety codes will be written and those now in use will be revised. A tentative program for the metals section of the National Safety congress was adopted.

In attendance at the Pittsburgh meeting were:

H. W. Darr, safety director Bethlehem Steel Co., Johnstown, Pa.; J. E. Culliney, Bethlehem Steel Co., Bethlehem, Pa.; John O'Rourk, Bethlehem Steel Co., Sparrows Point, Md.; C. M. Allen, American Rolling Mill Co., Middletown, O.; R. A. Chaffin, Continental Steel Corp., Kokomo, Ind.; Irwin A. Brinkman, Mackintosh-Hemphill Co., Pittsburgh; Mell E. Trammell, Gulf States Steel Co., Alabama City, Ala.; R. H. Ferguson, Republic Steel Corp., Youngstown, O.; H. M. Croghan, Inland Steel Co., East Chicago, Ind.; Charles W. Hanko, Pittsburgh Steel Co., Monessen, Pa.; P. J. Brand, Pullman-Standard Car Mfg. Corp., Chicago; J. A. Oartel, Carnegie-Illinois Steel Corp., Pittsburgh; E. F. Blank, Jones & Laughlin Steel Corp., Pittsburgh; W. T. Filmer, Youngstown Sheet & Tube Co., Youngstown; A. C. Gibson, Spang, Chalfant & Co., Inc., Pittsburgh; J. Dean Keefer, National Safety council, Chicago.

Financial

DIVIDEND news the past week provided holiday cheer because it was punctuated so frequently by extras and resumptions as well as regular declarations:

Enamel Products Co., Cleveland, extra of 10 cents, Dec. 31 to record of Dec. 24.

Laclede Steel Co., St. Louis, regular of 15 cents, Dec. 31 to record of Dec. 21.

Spicer Mfg. Corp., Toledo, O., regular of 75 cents on $3 preference stock, Jan. 15 to record of Jan. 3.

American Can Co., New York, extra of $1 on the common, Feb. 15 to record of Jan. 24.

Crane Co., Chicago, $1 against arrearage of $23.25 on the preferred, Jan. 25 to record of Jan. 10.

General Fireproofing Co., Youngstown, O., resumes with 10 cents on common, Jan. 2 to record of Dec. 21. Also regular quarterly preferred of $1.75 on the same date.

Fansteel Metallurgical Corp., Waukegan, Ill., initial quarterly dividend of $1.25 on no-par $5 preferred, March 14 to record of Dec. 31.

Atlantic Steel Co., Atlanta, Ga., quarterly of $4 a share, compared with previous $2, Dec. 31 to record of Dec. 21.

Fafnir Bearing Co., New Britain, Conn., quarterly of $1, increase of 25 cents, Dec. 31 to record of Dec. 23.

American Cast Iron Pipe Co., Birmingham, Ala., $6 against arrearage on preferred, Jan. 2 to record of Dec. 20.

J. M. & L. A. Osborn Co., Cleveland, 3½ per cent semiannual on the preferred and 50 cents a share on the common, Dec. 31 to record of Dec. 24. This is an indication of the trend of business in the wholesale field dependent upon the building industry.

BLISS & LAUGHLIN PROSPECTUS RELATES COMPANY'S HISTORY

Bliss & Laughlin Inc., Harvey, Ill., which is offering 50,000 $5 par common shares at $16.50, has issued a prospectus describing in detail its history in business, financial setup, and policies.

The business was started in 1891 by S. E. Bliss and John E. Laughlin as co-partners. The company was organized on Dec. 24, 1919, to take

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The handling of materials is just as much a part of your cost as the materials themselves. Move them more efficiently, perhaps stack them higher — to increase your profit margin.

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over the physical assets and business of the corporation by the same name, and since then has been under the management of Walter R. Howell, now president.

In 1929 the company put into operation its eastern manufacturing plant at Buffalo. Recently it enlarged its western plant at Harvey, a suburb of Chicago. The shares of capital stock just offered are from shares issued and outstanding and owned by certain stockholders and do not constitute new financing or the issuance of stock now held in the treasury.

AGAINST COMPETITOR'S PLAN FOR PRESSED STEEL CAR

General American Transportation Corp., Chicago, has submitted a plan of reorganization for the Pressed Steel Car Co. to the federal district court at Pittsburgh, whereby the General American company would put up $1,500,000 and receive 300,000 shares of new Pressed Steel Car $5 par 5 per cent prior cumulative convertible preferred stock, as well as 30,000 shares of new common stock. Preferred stockholders' and bondholders' groups are reported to have vigorously opposed the new plan as coming from a competitor, and there are other plans under consideration.

WAGNER CALLING PREFERRED

Wagner Electric Co., St. Louis, on Jan. 1 will call its preferred stock at $110 plus accrued dividend of $1.75. The company recently ordered 50 cents paid on its common, making $1 paid on it this year.

Foreign

INCREASING development of iron ore deposits in the Philippine islands is reported to the department of commerce by the trade commissioner at Manila. In 1935, monthly production by American interests, now in charge of the development, was 20,000 to 30,000 tons, which in 1936 will be increased to 30,000 to 45,000 tons monthly.

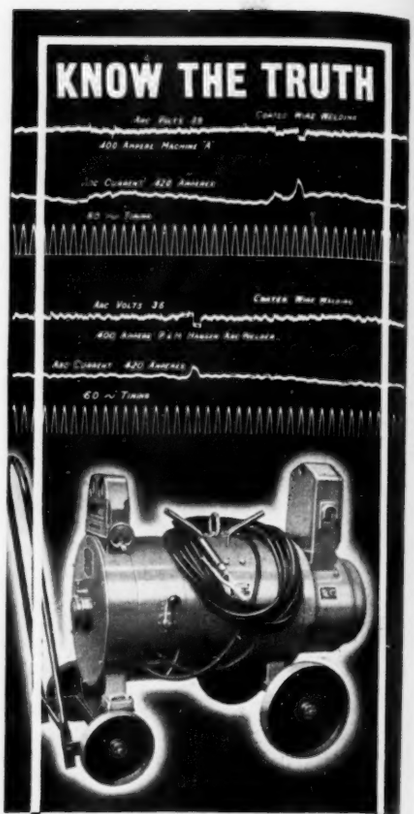
The Philippine ore is said to be a high grade hematite, 62.3 to 63.8 per cent metallic iron, with phosphorus 0.04 to 0.09 and sulphur 0.09 to 0.19. Reserves are said to total 4,500,000 tons. Japan has contracted for the entire output.

Other foreign trade developments reported to the department of commerce, Washington, are:

TURKISH 5-YEAR PLAN CALLS FOR IRON, STEEL INDUSTRY

Production of iron and steel is expected to begin within a short time in Turkey, as a phase of the Turkish 5-year plan.

All preparations for the creation of this industry have already been completed, and the Sumer bank has



about P&H-Hansen's UNIFORM WELDING CURRENT

The oscillograph record is the final court of appeals for arc welder performance. When you want the truth, ask for the record of this delicate instrument which plays no favorites—which detects every variation in voltage and amperage.

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P&H HANSEN ARC WELDERS

engaged foreign experts to assist it in its task of establishing a metallurgical industry in Turkey. Projects submitted by various foreign firms which have offered to make the necessary installations are being carefully studied.

It is reported that construction will commence in 1936, and the installation of the machinery will be completed within two years thereafter. The annual production of iron and steel in Turkey after 1938 is expected to be about 100,000 tons.

FRENCH REVISE COMPTOIR; ALLAY STEEL UNCERTAINTY

The general outlook in the French iron and steel industry at present seems distinctly favorable. It is generally felt in this industry that an improvement as to prices and activity is in sight.

The recent agreement reached by the French iron and steel interests in connection with the reorganization of the metallurgical comptoir is expected to dissipate the uncertainty which has prevailed in the domestic market. It is believed that there will be a decided change for the better in the domestic trade and that other branches of the industry that are not as yet under the control of the comptoir, or which do not as yet have a comptoir of their own, such as the producers of thin sheets, will be influenced to organize in the interests of a more stabilized market.

AIR DEFENSE SPURS MARKET FOR TOOLS IN ENGLAND

Machine tool manufacturers of the Birmingham, England, district have been operating at close to capacity recently and deliveries are deferred. For example, a common type of lathe cannot be promised under 18 weeks. This activity is largely due to more intensive production of aircraft parts and accessories, stimulated by the enlarged air defense program of the British government. Automobile manufacturers also are substantial buyers. British exports of metalworking tools have been increasing sharply.

GERMAN FOUNDERS FOR CARTEL FORMATION

While the general trend in the German foundry industry this year has been favorable, the financial position of many foundries has not kept pace with the increased turnover, and as a result 80 per cent of the foundries in Germany are reported agreeable to the formation of a cartel. The purpose of the cartel would be the fixing of a "uniform basis for calculation," presumably the equivalent of uniform cost accounting. German foundries are averaging 60 per cent operations. The Netherlands is Germany's most important outlet for cast iron products.

TO PROSPECT AGAIN FOR TIN IN MALAY PENINSULA

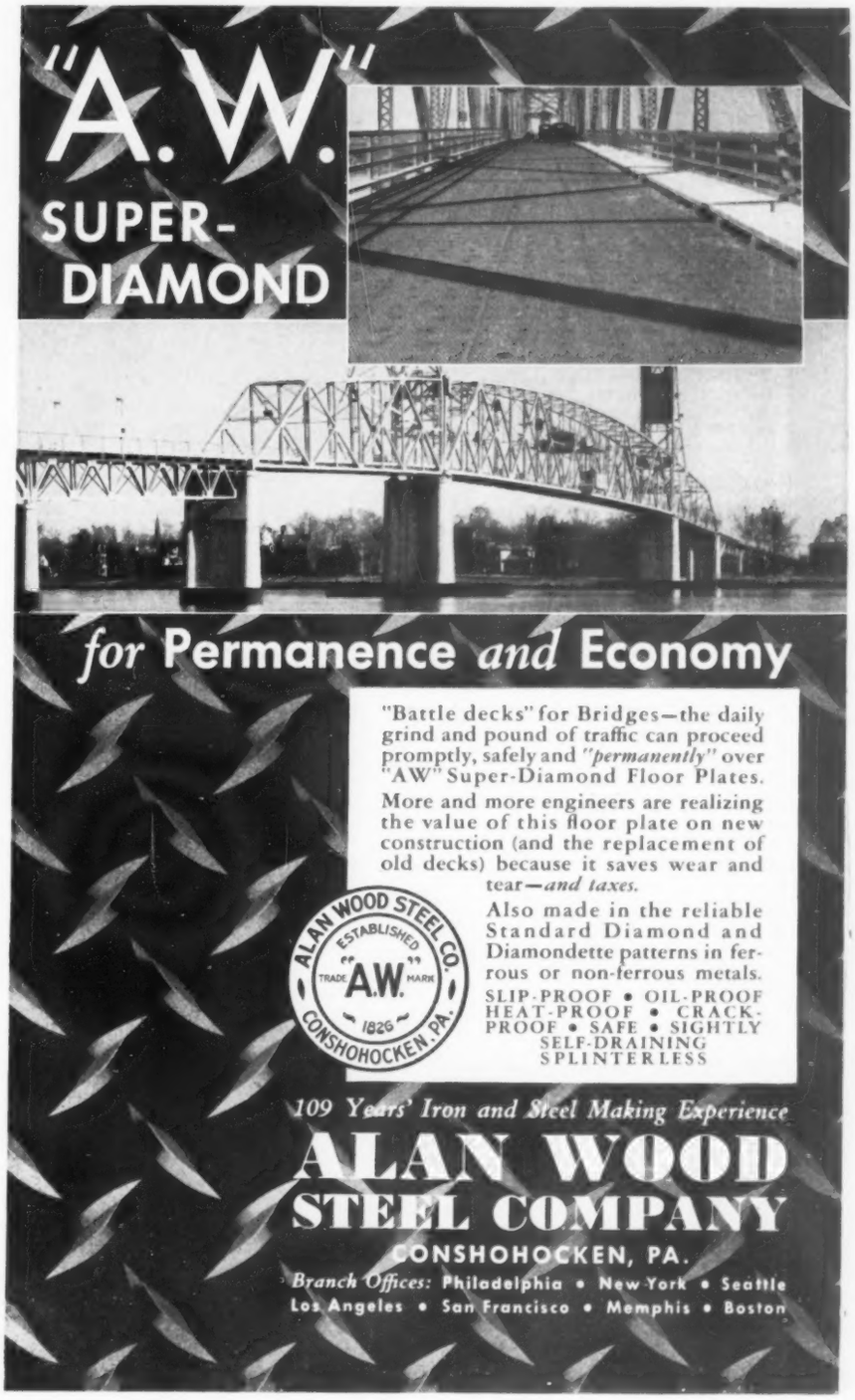
Exploitation of British Malayan tin resources may recommence as a result of the increased production quotas of tin permitted by the international tin committee.

In order to prevent depletion of the tin reserves of the country, the local government in 1929 inaugurated a restriction policy under which development of new resources was prohibited.

Many mining authorities in Malaya believe considerable tin remains undiscovered in the peninsula and that it will be brought to light once prospecting is resumed.

An important report submitted in 1934 by the local chamber of mines declared that the depletion of existing tin reserves would not affect the industry very much if there was a certainty of finding suitable ground to replenish them whenever necessary, but under present conditions there was no such certainty.

The government has taken the matter under consideration, and it is believed in local mining circles that the ban on tin prospecting may soon be removed.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Will Start Census of Business in January

The department of commerce has announced that a census of American business will be taken early in January simultaneously with the biennial census of manufactures. Both will cover the calendar year 1935.

"We have consulted a large number of business men and representatives of business organizations," says Secretary of Commerce Roper in announcing this census, "in the drafting and revision of our schedules and every effort has been made to simplify the inquiries.

"We have endeavored to avoid any questions that will annoy or antagonize the business man and have limited the amount of detail, in order that you may have no additional expense in making up your report.

"We ask for the co-operation and assistance of the business men of the United States in this undertaking and assure each of you that your individual report will be held absolutely confidential."

Behind the Scenes with STEEL

Off with the Old

A SCANT two days and 1935 will have ebbed its way into history. Whether the year has brought you fame and fortune or headaches and heartburn, STEEL wishes you the best for the New Year. Take it easy tomorrow night, and when midnight tolls, sit back in your chair and reflect that time is fleeting, the whims of Lady Luck are incomprehensible, and the dawn will be gray and dismal. Then raise your glass and toast a brighter future, a better order of things, a brand new shiny 1936.

* * *

Soothsayers

OPEN season on forecasts is now in full swing. Hundreds of touted and embryo economists are dipping their magic pens into inklings of the future and sending their messages to a hesitant and frightened world.

We might as well give you our forecast for 1936, as long as we're on the subject: *The year will be one of rising prosperity, barring any major disasters or calamities. Things will be better unless some unforeseen situation develops. Business should improve, excepting as some unexpected happenstance arises to plague it.* Is that vague enough?

* * *

Collegiate Capers

ASSISTANT PROFESSOR FREDERICK H. THOMAS of the department of mechanical engineering at the University of Illinois, Urbana, Ill., tells us he ran onto the following in answer to a question regarding the heat treatment of steel in an examination:

"Tool steel is hardened in the following manner: Put the steel in a red or white hot fire, heat to around 1400 degrees, let it cool by dipping it in water slowly and then watch to see if it turns to a light bluish gray color; when it does it is hardened. This process drives the carbon back and it may also be rubbed severely on a piece of wood so as to align the particles of the steel to make it more durable and less brittle."

Seems the stude who wrote the answer had seen a blacksmith harden a cold chisel, and the above answer was received to the student's inquiry as to what the smithy was doing.

That part about being "rubbed severely on a piece of wood . . . to make it more durable and less brittle" recalls the well-known woodshed scene in early American life. In our callow youth we missed this experience, so we are inclined to be very fragile and brittle.

* * *

Chiseler

OUR circulation department at intervals sends out letters to people they think would be interested in subscribing to STEEL, and as a courtesy a return envelope is enclosed, on which no postage is required from the sender. The other day a certain manufacturer, who must be still scraping the bottom of the depression, sent to our editorial department a sheaf of publicity for his products — in one of STEEL'S postpaid envelopes!

He must be one of those chiselers that the dear old NRA was supposed to have been "sicked" on.

* * *

Xmas Gift

WE HEARD of one young fellow who received a swell Christmas present. In the Dec. 16 issue of STEEL appeared an extensive review of a two-volume welding symposium published recently in London. A few days later came a check from a reader for the two books, with instructions where they were to be sent and a card which read: *Merry Christmas from Dad.* Fortunately our book department was able to send the volumes the same day, so he had them in time for a little Christmas reading.

* * *

Respite

NEXT issue of STEEL will be the annual Yearbook of Industry. In this monumental review of some 400 pages there is little room for flippancy or bon mots. In company with the authoritative comments of experts and editorial presentation par excellence, this department's mewlings would pale into insignificance.

So we will take a week's vacation —to Florida possibly—away from the typewriter and stoneproofs, to return in the Jan. 13 issue. Meanwhile we urge your careful attention to next week's publication. It will contain enough information to interest you for a long while.

—SHRDLU

Roper Reviews Gains of 1935

By Secretary of Commerce Daniel C. Roper

IN REVIEWING the economic data for the year 1935 available to the department of commerce I am impressed by the foundation which has been laid as a basis for further encouraging economic gains in 1936.

The production of consumers' goods during 1935 was at or above the relatively high level of 1934; there was further improvement in agriculture; some revival in the durable goods industries; widespread improvement in consumer purchasing based on increased employment, more equitable price relationships and a larger harvest; improved industrial earnings; an increase in the value of our foreign trade; and further improvements in the financial field, including a rising tendency in security markets and a gradual reopening of the domestic capital market to the flow of private funds. While these specific improvements are gratifying, the fact that the general cumulative forces of recovery are gaining is even more important.

This broadening of the recovery process has been strikingly shown in several tendencies of the past year which have brought a substantial increase in the national income as a result of steady improvement through the consolidation of gains previously achieved and the gradual extension of the recovery movement. Whereas in the two preceding years the upward movement was interrupted by sharp recessions, in 1935 business was definitely established on a higher plane early in the year and this level was materially raised in the last quarter. The 1935 increase in production was based on meeting the immediate needs, rather than on such anticipatory purchases by manufacturers and distributors frequently evident in 1933 and 1934 necessitating a periodic slackening of the productive processes while stocks were being absorbed.

As a corollary of these changes there was a further increase in the national income distributed during the year, preliminary estimates indicating a gain of approximately 10 per cent over the $50,000,000,000 total in 1934. The rise in the amount of the total income actually produced in 1935 was probably even larger, thus further reducing, if not entirely eliminating, the net business losses which reached huge proportions a few years ago. The salutary effect of this important tendency is not statistically measurable but is nevertheless sig-

nificant. The increase in income was widely diffused, wage earners and farmers receiving large proportions of the accretion.

A substantial increase in employment was effected during the year, with the major part of the gain accounted for in the manufacturing industries. There was also an encouraging expansion of employment in the construction industry, particularly in residential building. The latest monthly factory employment data available show an increase of 10 per cent in comparison with a year ago, factory payrolls being 25 per cent higher. The larger relative increase in the latter instance resulted from the opportunities afforded for more steady employment. Wages of factory workers generally were maintained at the level reached in 1934, when hourly rates were as high as in 1929.

More Confidence in Future

Although industrial production for the year was about 14 per cent above that in 1934, the production of durable goods recorded a gain of about 25 per cent. Consumers' goods of the durable type—automobiles, electric refrigerators, and washing machines, for example—were stimulated by enlarged purchasing power. Greater confidence in the future has brought more liberal spending in such lines and thus tended to foster the upward trend of business.

Among the more spectacular increases in retail sales in 1935 were the increase of about 20 per cent in sales of general merchandise in rural areas and an estimated increase of 40 per cent in dollar expenditures for new passenger automobiles, a large percentage of which also went to farm communities. The improvement in retail sales in rural areas was based on an increase in the cash income of farmers for the third successive year. The increase in income in 1935 provided a still wider margin beyond their fixed expenditures of the farm population and thus contributed very materially to more effective purchasing power. Urban sales of general merchandise, as reflected by department store sales data, increased 5 per cent.

Roosevelt Says Long Time Housing Program Nears

American Institute of Steel Construction, Concrete Reinforcing Steel institute, Metal Window institute and other members of the building materials industry conference which asked President Roosevelt a short time ago for clarification of the government's housing plans, have an answer:

"Your letter * * * * * which urges the definition of a national housing policy, is timely. As you know, the adoption of such a policy is within the province of the congress.

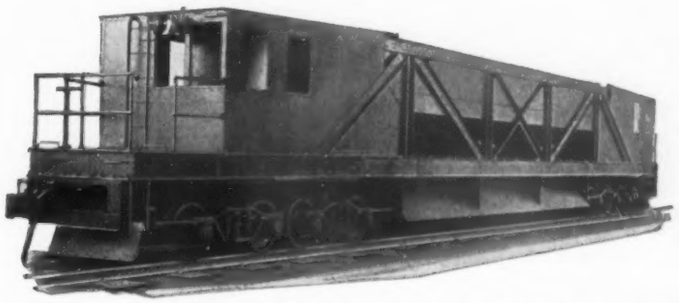
"The subject is one, however, which has actively engaged my attention and is now the subject of careful study. I am convinced that the people are aware of the enormous social values, and that industry is aware of the economic implications of a comprehensive housing program which aims to provide acceptable housing for all families whatever their incomes may be.

"The time has never been more ripe for the establishment of a long term program and I have high hope that this may be accomplished in the near future."

Tomorrow's Tools Ready When Industry Catches Up

Tools of To-morrow, by Jonathan Norton Leonard; VII+303 pages, 5½

ATLAS ORE TRANSFERS



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THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

x 8½ inches, 22 illustrations; black cloth cover; published by George Routledge & Sons Ltd., London; supplied by STEEL, Cleveland, for (price in England—12s 6d net), in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W.I.

This is an unusual book and stimulating reading. In the words of the publishers: "The tools of to-morrow are the dreams of yesterday, the inventions and discoveries of today. Many of them exist now only on paper or in the minds of scientists, but others of them are already proved and tested instruments which merely await the appropriate moment for their release."

The author uses the word tool in its wider sense, as will be seen from the main chapter headings: I—Gifts We Have Not Learned To Use; II—Food for Mechanical Slaves; III—The Muscles of Machines; IV—Metals—The Flesh and Bones of Machines; V—Our Mechanical Slaves; VI—Transportation; VII—Communication; VIII—What Applied Science Offers Us; IX—The Price of the Future.

In the first chapter, the author shows how, in every field, technology can advance only a certain distance ahead of the industries which support it: this is due mainly to the limiting effect of the economic factor; sometimes it is the political factor that interferes.

The second chapter deals with various media of power or sources of energy: it covers coal, water, tidal, volcanic, wind, solar and atomic power. In the third chapter, the muscles of power mean prime movers and the distribution of power: it includes an interesting discussion on power monopolies.

Chap. IV contains a section on metal resources and deals more at length with scientific prospecting and creating new metals. There is a special section on the light metals.

Chap. V begins with a section "How Inventors Work": it deals mainly with production machines organizing our machines, the possibilities of mass production, and the future of human labor. The two chapters on transportation and communication compare the merits of the various means at the disposal of modern man. The two last chapters bring out certain conclusions, chiefly that human nature can be corrected and that the benefits of science can be realized in a practical form by co-operation, without conformity.

In each chapter the author begins with a brief history of his subject from its early beginnings to its present stage; he then projects his subject into the future and visualizes its possibilities. It is evident the author is not only a scientist, but also a philosopher.

CAST PIPE RATES REVISED

Interstate commerce commission has found that rates on cast iron pipe, in carloads, from the Birmingham, Ala., district and Chattanooga, Tenn., to destinations in the western part of the western trunk line territory to be unreasonable. A reasonable basis of rates has been prescribed. The decision was in the case of the Alabama Iron & Steel Shippers' conference against the Santa Fe railroad.

HEADS EAGLE-PICHER RESEARCH

Earle W. McMullen formerly vice president and general manager of the Ault & Wiborg Corp., Cincinnati, has been appointed director of research of the Eagle-Picher Lead Co., Cincinnati. Since 1909, when Mr. McMullen graduated from Armour institute of Technology with the degree of bachelor of science in chemical engineering, he has been active in various phases of theoretical and practical research.

Purchasing Agents Sanguine for 1936

(*Continued from Page 9*)

modity prices will be pretty stable but volume will be better.

C. G. Bunnell, general purchasing agent, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.:

The resistance to any great increase in commodity prices has been substantial all through the current year and we expect this situation to continue in 1936.

Building materials will probably work a little higher as a whole, with some items already too high and some too low. Hides, leather, and livestock should go lower, while agricultural and fuel prices should go to a little higher ground. Metals, both ferrous and nonferrous, should go up a few points with textiles, paint materials, paper and pulp rising a little. We expect little change in chemicals and oils.

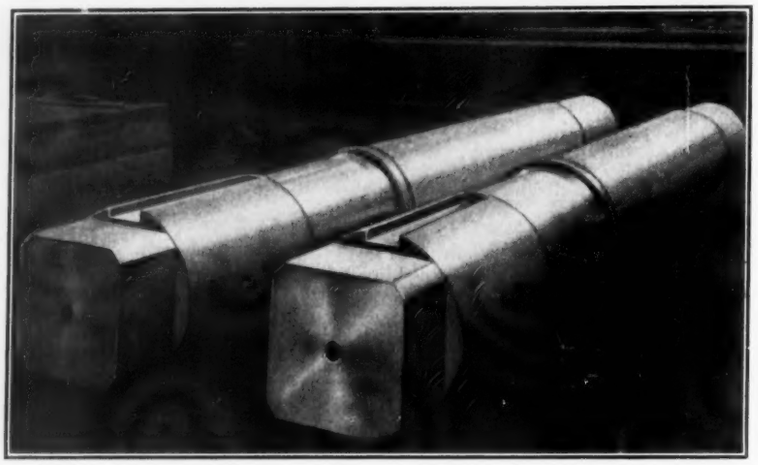
Commodity prices as a whole should move along with the degree of progress made in business recovery.

The business volume in the country is expected to reach the normal line and may even pass it in the last quarter of 1936. The heavy industries, usually slow in getting under way, should make substantial progress as the movement is already in motion. The building and construction industries should advance in activity very substantially during the year. The considerable increase in real estate activities foreshadows the expected improvement.

The political situation is such that we expect no great retarding influence will be specially effective. The individual, class and mass psychology of bewilderment, uncertainty and fear has been replaced by that of confidence and hope backed by a markedly noticeable *militant attitude* to go ahead.

"It is my firm opinion that all re-

QUALITY FORGINGS



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ferences to depression can be accepted as a past issue, for we have been up and over the top for some time, and further, I firmly believe that 1936 will be equal to, if not better, than 1929.

George L. Meyer Jr., director of purchases, Stewart-Warner Corp., Chicago:

There is little question but what business in most lines has been better. Much of this is due, as much, I believe, to the spendings by the federal government as it is to other legitimate demands. The administration talks of coming closer to a balanced budget in the near future. Consequently, if federal spendings were much curtailed, buying power would necessarily be curtailed to a similar degree. I question, however, whether the federal government will be able to carry out this sound idea, and consequently, government spendings will no doubt continue.

Next year, 1936, is an election year, and the administration certainly will take all possible means to make business as prosperous as possible so that they may be returned for another four-year period.

In the durable goods industry, which is in better condition than in the past, activity is, according to our leading economists, very essential for bringing business back to normal.

An award by the Pennsylvania railroad just recently of 10,000 freight cars indicates possible replacement buying by other roads.

The rate at which home building is progressing, is good, and I believe will continue to increase.

Stocks of copper and zinc have declined materially.

The decision of the steel manufacturers not to advance prices for the first quarter, and the recent reduction in prices on certain steel commodities presents an uncertain picture.

With increased profits, labor will no doubt also feel that it should receive increased wages, so as a whole, I look for a fairly stable market over the next six months, with the need to exercise caution in purchasing some commodities, and the use of more liberal coverage on others.

One cannot recommend a uniform buying policy.

Lee J. Bussmann, purchasing agent, Bussmann Mfg. Co., St. Louis:

What's ahead for 1936? What about volume, commodity prices and business trends?

Well, one year ago I chanced an opinion for 1935, and when I check over that statement now, it seems to be a satisfactory one for the coming year.

The "forget politics—go ahead" motto was very well applied by many industries who made a good showing in the past year, particularly the automobile business. So my opinion (and suggestion to purchasing agents for 1936) is the same as last year. Here it is:

Business conditions, commodity outlook and price trends are so muddled that no one can make a fairly accurate statement, or give a definite opinion backed up by sound reasoning, as to exactly what can be expected in the next six and twelve months. Some insist the only thing you can do is to work as hard as possible, grab what business you can at fair prices and do what you can with that. Another suggestion is that business men forget about some of the political considerations and influences and work to the slogan recently revived: "Damn the torpedoes—go ahead."

That can well be applied to business if the purchasing agent keeps informed and gives serious consideration and thoughful study to the price situation in each line and on each of his major commodities, because no general plan can be followed to suit a varying group of commodities. Purchasing agents must seek competent counsel and look for reliable information on their materials, markets and methods.

I still believe that volume for the next six and twelve months will be larger, and that prices in general will be higher three, six and nine months from now.

Arthur P. Hickox, director of purchases, Scovill Mfg. Co., Waterbury, Conn.:

In my opinion prices will be steady to strong but average prices are not likely to exceed 5 per cent above the current figures.

I look for more activity in 1936 than this year but hope we get our profits out of that greater activity rather than any radical increases in prices which might lead to less activity.

Equipment

St. Louis—Contract for main drives and heavier electrical equipment for Granite City Steel Co.'s new hot and cold strip mills has been awarded to Allis-Chalmers Mfg. Co., Milwaukee. Additional electrical equipment will be given to local companies, including Westinghouse, Century Electric, Wagner Electric and Maloney Electric. Mill foundations were awarded to Fruin-Colnan Contracting Co.; cranes to Harnischfeger Corp.; buildings to Stupp Bros.; and mill machinery to United Engineering & Foundry. The new mill is expected to be in operation the early part of next summer.

New York—Sheet metalworking machinery demand is a feature here. Substantial buying is in progress by a Long Island City concern and interesting inquiries are noted in other quarters. Deliveries on this type of

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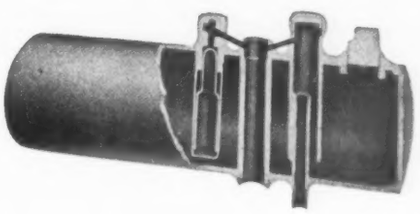

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equipment, as is the case in several other lines of machinery, are steadily being extended. A price advance in sheet metal working machinery may be announced shortly. Railroad equipment demand continues dull, and while there is some fair inquiry for shipyard equipment sellers do not regard this latter field as promising at the moment.

Chicago—Machinery and equipment sellers see early recovery from the recent quietness in most markets. Machine tools on inquiry bulk fairly large, and an upturn in sales is in prospect for January. Increased activity at railroad shops so far has been reflected more in purchases of machinery repair parts and buying of new equipment is limited to individual items, though the outlook for better orders from railroads is the most favorable in several years. Fairly steady demand continues for small tools.

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Construction and Enterprise

Ohio

AKRON, O.—Johnston Welding & Spring Co. has been incorporated by John J. Johnston, Herbert M. Wright, and Harold C. Johnston, 46 West Exchange street.

CLEVELAND—Midland Steel Products Co., Madison and West 106th street, has leased 75,000 square feet of floor space adjacent to its plant, for the manufacture of refrigerating units for a new type of kerosene-operated refrigerator, to be introduced by Sears, Roebuck & Co. E. J. Kulas, president, has announced that Midland Steel Products Co. has also acquired the exclusive patent rights to a new type of gasoline pressure stove burner and portable gasoline pressure stove, and will manufacture these in 1936.

DAYTON, O.—The Dayton Supply & Tool Co. has been incorporated by A. G. Hodapp, Martha Burger and Dale Hodapp; correspondent is Dale Hodapp, 200 Cooper building.

DAYTON, O.—Dayton Power & Light Co., a subsidiary of Columbia Gas & Electric Co., has announced a $3,000,000 expansion program for the Miller's Ford plant near here. The work includes installation of a new turbo-generator.

ELYRIA, O.—Arrangements have been made to move the plant of the Dunham Co. of Berea, O., to this city. The company, manufacturer of farm machinery, will occupy the building formerly used by the Willys-Overland Co.

MANSFIELD, O. — Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has announced the purchase of a site for construction of a 4-story brick warehouse here. Vice President A. E. Allen says that construction will start immediately, with estimated cost to be $100,000.

MASSILLON, O.—J. O. Eaton, chairman of Eaton Mfg. Co., East Sixty-fifth and Central avenue, Cleveland, has announced decision of the company to move its Eaton Detroit metal division from Detroit to this city. The metal division handles automobile hubs and caps, and an extended line of stampings for the specialty trade. Plant not fully equipped.

NEW PHILADELPHIA, O.—Tuscar Metals Inc. of this city, has acquired the abandoned plants of the American Sheet & Tin Plate Co. here and in Dover, O., and will combine the two plants into a steel fabricating works. The work of remodeling is being supervised by Ralph Kiefer, Pittsburgh, recently elected vice president of Tuscar Metals Inc. The company anticipates further expansion and re-equipment of plants.

Illinois

CHICAGO—United States engineer, Canal and Van Buren streets, will ask bids Feb. 3 for construction of a derrick boat, 15 tons, steel hull, steam-operated A-frame, with heavy duty clamshell bucket.

CHICAGO—Boats Inc., 900 South Michigan avenue, has been incorporated to deal in boats, vessels, and equipment, by H. A. Jones, Laura Skinner Jones, and Harold M. Keele. Correspondent is Levinson, Becker, Peebles & Swiren, 1 North LaSalle street.

CHICAGO — Nu-Alloy Corp., 4750 Sheridan road, has been incorporated to deal in steel and iron, by Elmer P. McClure, William A. Hastings Jr., and Clarence A. Rennacker. Correspondent is William A. Peterson, 14 South LaGrange road, LaGrange, Ill.

CHICAGO—Lever Bros. Co., Cambridge, Mass., has started work on a $2,000,000 addition to its Hammond, Ind., soap plant for the manufacture of a new vegetable lard substitute. The work is in charge of Stone & Webster Engineering Corp., Boston.

CHICAGO—Telesco Mfg. Co. Inc., 77 West Washington street, has been incorporated to do a general manufacturing business, by Harold I. Griffin, Earl E. Schultz, and Wilfred Griffin.

CHICAGO—McClanahan Refineries Inc. has recently signed a license contract with Universal Oil Products Co. Inc., 6455 Kingsley street, Dearborn, Mich., and has started construction of a Dubbs reforming unit in its refinery at St. Louis, Mich. Project includes absorber, stabilizer, and caustic and doctor treating plant. It is designed with oversize parts to facilitate future addition of a two-coil Dubbs cracking unit. Arthur G. McKee & Co., 2422 Euclid avenue, Cleveland, is the contractor.

PEORIA, ILL.—Ground has been broken for the new addition to the R. G. Le Tourneau Inc. road machinery plant here, which will double the capacity of the present plant. The company's main office is at Stockton, Calif.

Indiana

INDIANAPOLIS—The granting of several building permits to the Schwitzer-Cummins Co., 1125 Massachusetts avenue, indicates that the company plans further expansion of its plants. The concern manufactures fans and superchargers, and some time ago added an automatic stoker to its line of products.

INDIANAPOLIS—Bowes Seal Fast Corp., 226 North Pine street, has announced plans for the opening of a plant in London, England. Operations there are expected to begin next spring. Robert M. Bowes is president of the company, which manufactures tire and tube repair materials, and other automotive products.

MT. VERNON, IND.—Board of

public works has had plans prepared by D. T. Blakey, Acme Hotel, Evansville, Ind., engineer, for the construction of a 1-story gas plant to include a 14,000-gallon steel liquid storage tank and an 18,000 cubic foot steel gas storage tank, with gas compressors, equipment, and approximately 5 miles of standard metal piping for distribution system, costing approximately $60,000. H. Bray is mayor of Mt. Vernon.

New York

BUFFALO—Sale of the Buffalo Marine Construction Co. to Adam E. Cornelius, vessel owner of this city, has been announced. A consideration of $200,000 was involved, and Mr. Cornelius contemplates adding additional dry dock facilities to the plant.

MT. CISCO, N. Y.—Junior Mfg. Co. of this city has been incorporated to deal in machinery and tools, by Myle J. Holley, 40 East Forty-first street, New York.

NEW YORK—Alford Co. Inc. has been organized to deal in sheet brass, copper, silver, and metal of all kinds, including the business of welding, brazing, and cutting of metals of all kinds. Papers were filed by Samuel L. Marcus, 277 Broadway.

SYRACUSE, N. Y. — General Railway Signal Co., Rochester, N. Y., has received a $299,000 order from New York Central railroad, 466 Lexington avenue, New York, for electric interlocking switches for grade crossing work at this city.

Pennsylvania

CLAIRTON, PA.—Carnegie-Illinois Steel Corp., Pittsburgh, has taken over 16 additional acres here, including the old Morris & Bailey Steel Co. buildings and property.

PITTSBURGH — Burrell-Mase Engineering Co. is designing and building a vacuum rectification plant for the Neville Co., Neville island.

READING, PA.—Berks Box Co. has been incorporated to make boxes and containers, by Renton Brown, George Dyson, and Alan M. Hawman Jr.

READING, PA.—Reading Vitreous Enamelling & Foundry Co. has been incorporated to make metal and enamel products, by Sarah G. Blatt, Samuel F. Blatt, and Leonard E. Bilger.

UNIONTOWN, PA.—Goldberg Iron & Metal Co. plant was destroyed recently, involving a loss of $75,000.

Michigan

DETROIT—Master Screw Corp. has been incorporated to deal in nuts and bolts, by Harry Woolison, 2640 Ferry Park avenue.

GRAND RAPIDS, MICH.—Edward F. Fisher, general manager of the Fisher Body division of General Motors Corp. has announced that a $7,000,000 plant for making dies and boot stampings will be erected here, from which all of the corporation's assembly plants would be supplied.

KALAMAZOO, MICH. — Fairchild Specialty Mfg. Co., 513 East Willard street, has started local distribution of its bicycle speedometer, as a result of its first productive steps since organization. The concern, which will later on manufacture many such specialties, has started into operation, with John Plantefaber, E. H. Graff, and Horatio J. Fairchild as its officers.

REED CITY, MICH. — Reed City Kiln Drying Co., Arthur Adamy proprietor, is building an addition to its kiln drying plant.

Maryland

BALTIMORE — O. C. Huffman, president of Continental Can Co., New York, has stated that construction is about to begin on an addition to the plant in this city, to cost in excess of $250,000.

District of Columbia

WASHINGTON—A $2,065,074 contract has been awarded to the Northrop Corp. of Inglewood, Calif., by the war department, for 100 planes. Each ship has four fixed and one flexible machine gun, racks for four large or twenty small bombs, and chemical distributing equipment.

Florida

GOULDS, FLA.—Frederick Peters will build a 1 and 2-story packing plant, with H. A. Shambaugh, 280 Northwest Fifty-ninth street, superintendent. Russell T. Pancoast, 1657 Alton road, is architect.

MIAMI, FLA.—Caribbean Navigation Co. has been incorporated by J. P. Ferenick and M. E. Heywood, 2986 Southwest Fourteenth street.

MILTON, FLA.—City, S. D. Stewart clerk, receives bids Jan. 3 for furnishing materials and constructing sewerage system, consisting of approximately 20,000 feet of sewer line, Imhoff tank disposal plant, two pumping stations, and chlorinator. T. M. Lowe, Gainesville, Fla., is consulting engineer.

PALM BEACH, FLA.—Baker Appliance Co. has been incorporated by T. S. Baker and E. I. Baker.

ST. PETERSBURG, FLA.—Automatic Electrical Devices Inc. has been organized by W. P. Moorefield and A. C. Harvey.

TAMPA, FLA.—Florida Automatic Sprinkler Co. has been incorporated by R. E. Brown and W. E. Bowen.

Louisiana

ALEXANDRIA, LA. — Wholesale warehouse of A. R. Rush at 1052 Washington street was recently damaged by fire.

BOGALUSA, LA.—Plant of Switzer Box Co., owned by J. T. Switzer, was severely damaged by fire.

South Carolina

CHESTER, S. C. — Springs Cotton Mills, Elliott Springs president, will erect $20,000 addition to Gayle unit to house Barber Colman warper and 100 looms.

COLUMBIA, S. C.—City, W. S. Tomlinson city engineer, receives bids Jan. 14 for furnishing labor, materials, and equipment for constructing coagulating basin and alteration of present basin, together with certain chemical

(*Please turn to Page* 63)

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(Concluded from Page 61)

feed machines, necessary piping, valves, etc.

GREENVILLE, S. C.—J. A. Rosemond, route 5, is rebuilding a burned flour and feed mill, and saw mill, and will install machinery estimated to cost $12,000. Equipment needed includes flour mill, pulleys, belt and shaftings, bearings and hangars, saw mill, corn sheller, and hammer mill.

Tennessee

CHATTANOOGA, TENN. — Chattanooga Steels Inc., organized recently to handle structural shapes, will occupy the building formerly used by the Street Bros. Machine Co. E. H. Cairns is head of the new company.

NASHVILLE, TENN. — Nashville, Chattanooga & St. Louis railroad, 430 Broadway, Nashville, Tenn., contemplates the inauguration of streamline trains between Nashville and Memphis, Tenn., at a cost of $500,000.

ROCKWOOD, TENN.—Russell Engineering Co., Detroit, has a 90-day option on furnaces and 4000 acres of Roane Iron & Coal Co. Cyril J. Smith is attorney, and improvements will be made.

West Virginia

HUNTINGTON, W. VA. — Percy Groves, Brown building, Philadelphia, and associates are interested in the establishment of a terminal for transhipment of coal and grain between river boats and railroad; will place in operation 100 barges and 25 tugs between Huntington, Kanawha river and upper Mississippi river ports.

Virginia

CLIFTON FORGE, VA.—Navien & Son, New York, manufacturer of ribbon and braid, will open a plant soon in Cliftondale, Va., and is installing machinery.

Missouri

KANSAS CITY, MO.—Metals Producing Co. has been incorporated by S. W. Abrams, Miami, Okla., and Victor J. Silliman, Midland building, this city.

ST. LOUIS—Unable to fill 50 per cent of its own contracts received this year, Byrd Implement Co. of Alamo, Tenn., will build its own plant for manufacturing a side harrow, invented by R. A. Byrd, president of the company.

Arkansas

RUSSELLVILLE, ARK. — WPA allotted $16,000 for additional work on Arkansas Polytechnic College airport, and will erect hangar.

Oklahoma

MANGUM, OKLA.—Mangum Tractor & Implement Co. has been incorporated by E. R. Talley and A. M. Wright.

PICHER, OKLA.—Landis Steel Co. has been incorporated by Irvin Hudson, Picher, and John E. Landis, Baxter Springs, Okla.

TULSA, OKLA.—Standard Lumber & Mfg. Co. has been incorporated by F. E. Ninde and M. B. Ninde.

Texas

SAN ANTONIO, TEX. — San Antonio Portland Cement Co., C. Baumberger Jr. president, is having preliminary surveys made for the construction of a cement manufacturing unit, particularly adapted for oil well casings. This will require some special and regular machinery and equipment, at an estimated cost of $150,000. Maturity in 1936.

WHITNEY, TEX.—McKenzie Construction Co., San Antonio and Dallas, Tex., was low bidder at $27,000 for sanitary sewer system. Joe J. Rady, 410 Majestic building, Fort Worth, Tex., is engineer.

Wisconsin

GRAFTON, WIS.—Sohns Mfg. Co has been incorporated to manufacture heaters, heating units, and heating accessories, by Harry, Ida, and Beulah Sohns.

OSHKOSH, WIS.—Banderbob Furniture Mfg. Co. has been incorporated to manufacture furniture, by C. A. Wieckering, O. J. Hardy, and E. M. Marheine.

RICE LAKE, WIS.—John G. Breunig, Bloomer, Wis., and associates is building a new brewery plant to cost approximately $100,000. The latest in brewing machinery and equipment will be installed.

Minnesota

MINNEAPOLIS — Minnesota Auto-Stop Corp. has been incorporated to manufacture traffic regulating devices, by E. R. Guy, Nathaniel Stevens, and John F. Nichols.

MINNEAPOLIS—Toro Mfg. Corp., 3042 Snelling avenue, has been incorporated to manufacture power lawnmowers for golf courses, etc. J. S. Clapper is president, J. L. Record vice president, and H. C. McCarthy secretary-treasurer.

RED WING, MINN.—This city has succeeded in raising $15,000 to finance the establishment of the Hubbard Mfg. Co., manufacturer of packing plant machinery. J. W. Hubbard, president of the company, will supervise remodeling of the Betcher building, for the new plant. C. W. Loring is chairman of the new industries committee of the chamber of commerce.

South Dakota

LEAD, S. DAK.—Homestake Mining Co. is completing its new $1,250,000 steam power plant. The new Ross shaft and hoist will cost approximately $2,000,000, in which steel shaft sets are being used, instead of the usual timbering. The new refinery in this project is nearing completion.

Iowa

DES MOINES, IOWA—Des Moines Steel Co., fabricator of structural steel, is building an addition to its plant at Fourth and Tuttle streets, southwest. A 20-ton capacity traveling crane will be installed. The new building will be used for heavy work on large steel pieces. J. E. Van Liew is president.

WATERLOO, IOWA—Chamberlain Corp., manufacturer of clothes wringers, etc., has awarded contract for the erection of a 1-story factory addition. F. L. Chamberlain is president.

Nebraska

OMAHA, NEBR. — Agricultural Power Alcohol Corp., Philip A. Tomek, David City, Nebr., president, has acquired the Iler distillery at Fourth and Pierce streets, and will improve same and install machinery for the manufacture of alcohol. Estimated cost for improvements is $20,000, and for machinery, including boilers, fermenters, agers and storage facilities cost is $80,000.

Pacific Coast

LOS ANGELES—Don Shaffer Tool Corp., Los Angeles county, has been incorporated by D. U. Shaffer, Pico, Calif.; Esther M. Sandman, Brea, Calif.; and W. E. Krupp, Fullerton, Calif.

LOS ANGELES — General Motors Corp., Detroit, will build a plant for the assembly of Pontiac, Oldsmobile, and Buick automobiles in this city, with an initial capacity of 40,000 to 50,000 cars per year. Cost of land, buildings, and equipment is expected to be $2,500,000.

LOS ANGELES—Spencer Kellog & Sons Inc., of Buffalo, will build a new plant on Cerritos channel, and will equip for crushing, refining and bulk storage of linseed oils.

SAN FRANCISCO — Adrian D. Joyce, president of the Glidden Co., Cleveland, has announced the purchase of sufficient land here to double the company's area in this city. Construction has begun on a fireproof and earthquake-proof addition that is to be completed by March 15.

ABERDEEN, WASH. — Work has started on the construction of a $25,000 ice and refrigerating plant, capacity 2,000 tons, for the Ice Delivery Co., 115 Blanchard street, Seattle.

BREMERTON, WASH. — Yulakom Mining Co. Inc., 645 Fourth street, has been formed by A. E. Olsen and associates.

KENNEWICK, WASH.—Passage of a $17,000 bond issue assures a proposed water system extension, estimated to cost $28,000.

SALKUM, WASH. — The lumber plant of Chehalis Mill Co. was damaged severely by fire.

SEATTLE — Royal Queen Co. of Washington Inc. has been organized by W. R. Alexander and associates, 200 West Thirty-sixth street, to deal in automatic stokers, heating units, etc.

SELAH, WASH. — A new call for bids for a disposal system has been issued.

SHELTON, WASH. — City has rejected tenders for pumping equipment, and new bids are asked for early January.

Dominion of Canada

BURNABY, B. C.—Western Nonmetallics Ltd. plans the construction of a plant for the manufacture of diatomite.

MONTREAL, QUE.—Canadian Industries Ltd., 1050 Beaver Hall hill, will call for bids next spring for the construction of an extension to its cellophane plant at Shawinigan Falls, Que. Estimated cost is $100,000.

Foreign

BIRMINGHAM, ENGLAND—British Austin Motor Co. has recently formed a subsidiary, to be known as Tunstall Steel Ltd., for the purpose of manufacturing special steel sheets, forgings, and stampings to be used in the manufacture of Austin cars. Tunstall Steel Ltd, will erect a plant at Wolverhampton, England, and install American presses and labor-saving devices.

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Sales of Used Machines to Foreign Buyers Tapering

FOREIGN buying of used equipment appears to be tapering off from recent levels. Representatives of foreign powers, as late as November, were touring the country seeking to pick up bargains in used tools, chiefly those capable of being used in armament production, although the stated use for the machine was usually "some automobile" or "some airplane" plant.

However, the federal government lately has been viewing all foreign shipments with a fishy eye, and some sellers have clamped down entirely on such sales. Throughout the year, both Italy and Japan have been active in the used machinery market, but at the moment it is said there is little doing with either.

Incidentally, these fellows are usually wily customers, who never lose an opportunity to attempt some special arrangement on credit, or shipping the equipment f.o.b. "their" boat, etc. But practically all sales have been on a strictly cash basis.

* * *

ONE REASON for the scarcity of good used equipment in industrial plants has been the depression practice of "robbing" idle machines of parts required by the machines in service. Many of these idle tools have been stripped clear down to their frames, and require extensive overhauling and re-equipping before they can be made suitable for further service.

Hence, the machines, as they stand on the owners' floors, are no good for a prospective user-buyer, and usually become the property of some dealer in used equipment, most of whom operate completely equipped reconditioning shops with thoroughly trained personnel.

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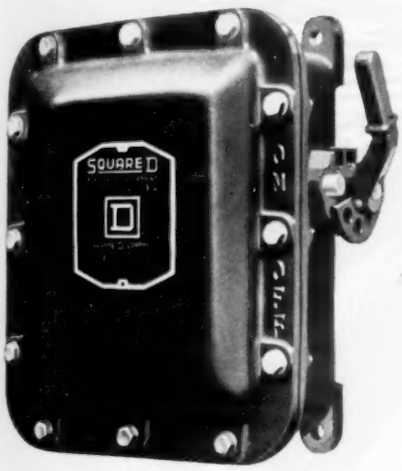

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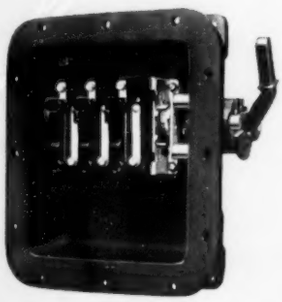

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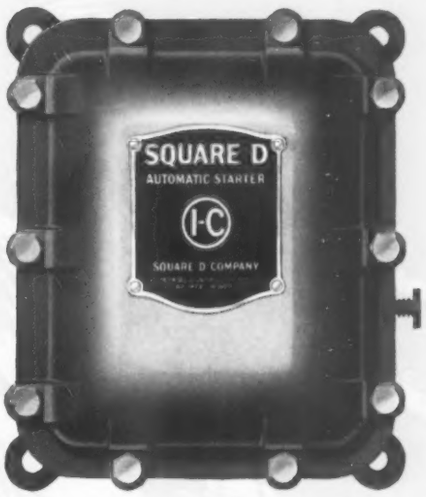

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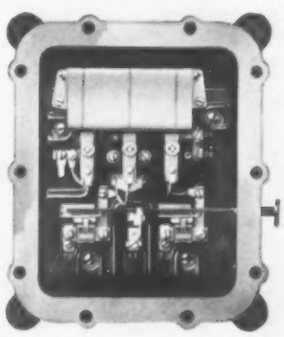

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